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ABSTRACT

This document contains materials about and products of a practicum devoted to creating and sustaining learning communities in the digital era that was conducted by Nova Southeastern University in Winter 1996. First, human resources development programs are discussed as vehicles for creating high-performance learners, workers, and leaders who are equipped with the critical thinking, communication, and specialized job skills required to function in high-tech workplaces. Described next are efforts to establish/maintain online learning communities, including the Greater Philadelphia Area Citystate program and a human resources development program in western Pennsylvania. The implications of online learning communities for higher education and considerations in creating and sustaining/expanding them are examined. Appendixes constituting more than 90% of this document contain information about products of the U.S. National Information Infrastructure Initiative, five newsletters on sustaining a learning community, and the following seminar and practicum papers: "Analysis of Human Resources Development at Garrett Community College" (Thomas H. Kierstead); "Remedial and Developmental Mathematics at Garrett Community College: A Vision for the Future" (Thomas H. Kierstead); "Strategic Plan for Remedial and Developmental Mathematics Initiatives at Garrett Community College" (Thomas H. Kierstead); "Analysis of the Strengths and Weaknesses of the Human Resources Development Effort at Alderson-Broaddus College" (Derek Crews); "Vision of a Program for Learning Disabled Students at Alderson-Broaddus College" (Derek Crews); "Multi-Year Action Plan to Implement a Program for Learning Disabled Students at Alderson-Broaddus College" (Derek Crews); "Strategic Plan for the Development of the Graduate Nurse with Critical Thinking Skills" (Amy P. Leehan); "Multi-Year Program Evaluation Action Plan for Mount Vernon Nazarene College's Teacher Education Program" (Bevin Shiverdecker); "Development of a Questionnaire for the Certified Network Administrator Course" (James E. Barger); and "Development of a Strategic Plan to Provide a Multisite Electronic Engineering Technology Program at the Community College of Allegheny County" (Pearley Cunningham). (MN)

ED 396 188

CREATING AND SUSTAINING LEARNING COMMUNITIES in the *DIGITAL ERA*

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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NOVA SOUTHEASTERN UNIVERSITY
WINTER 1996

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ABSTRACT

One ultimate purpose of education and training programs is to prepare the critical mass of intellectual capital to lead communities and enterprises through processes to co-create a desirable future with a preferred quality of life standard. Research and development creates advances in science and technology that can lead to improved quality of life. Advances in science and technology are (a) becoming more complex, (b) increasing at faster rate and (c) fundamentally restructuring work. Ponder your youngster asking you to (a) define technology, (b) describe a chip, (c) discuss digital, (d) explain multi-media, and/or (e) talk about smart card and wireless technology. Or, imagine your child asking you to describe what work will be like in a virtual factory, virtual hospital, or virtual college in

"Creating and Sustaining Learning Communities" deals with "New Habits of Heart and Mind" that are needed to adapt to technology-based education and training paradigms. The last report was about online advising for professionals working on dissertations (ED 389 890). However, lessons learned apply to all levels of education and training. This **analysis** raises issues like "What are the competencies and skills of **High Performance Learner Workers** in a global economy characterized by **Electronic Commerce**? An equally important issue is "What are the competencies and skills that **High Performance Learner Leaders** need to co-create processes to re-engineer communities and enterprises?"

Electronic classrooms were conducted for professionals working on dissertations during winter quarter 1996. Ecrs were supplemented by five newsletters sent in advance to all advisees. The newsletters were distributed to professionals enrolled in Human Resources Development (HRD) in the Western Pennsylvania Cluster. Enrollees in HRD and a few students working on practicums participated in the ecrs.

Information about the Greater Philadelphia Area Citystate is presented to add clarity to technology-based paradigms issues. As the global economy emerges through Electronic Commerce, cyberglobal technology-based learning paradigms will have to be engineered to prepare the critical mass of intellectual capital and workers for new workplaces. Implications are stated for planning for certificate and degree programs. Appendixes contain information about the Electronic Commerce, newsletters and work by professionals.

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HUMAN RESOURCES DEVELOPMENT

> It is those populations with well trained and well educated citizenry that will transact, exchange, fashion, and construct the commerce of the world.
>
> Robert B. Reich, The Work of Nations: Preparing Ourselves for 21st Century Capitalism. New York: Knopf, 1992.

HIGH PERFORMANCE LEARNERS AND WORKERS

Human Resources Development (HRD) systems consist of three curriculum components (a) content and content format, (b) delivery system format, and (c) student learning outcomes evaluation formats. Curriculum development specialists take various approaches in designing curriculum that range from (a) a Frank Lloyd Wright approach with creativity in the development of the IDEAL to (b) a Levittown approach that is primarily taking a box and dividing it into component parts.

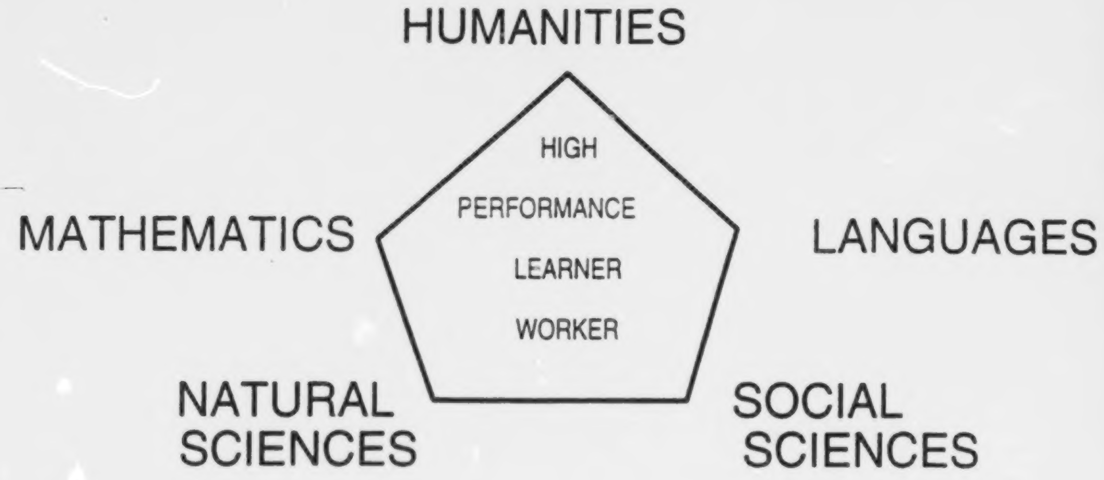
A great deal of what is called re-engineering consists of rearranging the grades, converting from a seven to a five period day, or shifting from quarter to semester hours. All of these are delivery systems and packaging formats. Stakeholders consume vast quantities of resources over format issues, independent variables, that may or may not contribute to a **DEPENDENT VARIABLE** of high quality output.

One of the outcomes of an education system is to prepare a high quality learner-worker who is proficient in the society of which s/he is a part. Consider the following challenge. **"Electronic Commerce Becomes the Norm, Not the Exception"** was the headline of the Winter-Spring, 1995, issue of the ECRC News (Electronic Commerce Regional Centers). The article went on to say, "The fact is, the world is already moving at light speed. Electronic banking, home shopping and e-mail are just a few examples. The biggest push by the government is yet to come. President Clinton established a 1997 deadline for full government-wide Electronic Commerce."

Even if there is no basic restructuring of the bureaucratic, layered, subject-centered, contemporary traditional approach to schooling, what should be the curriculum to prepare learner-workers for Electronic Commerce (EC)? If colleges continue to prepare teachers in a discipline-centered way, what content and content formats are more likely to prepare fledgling service providers for practice teaching contexts they encounter? What societal factors, including technology, are shaping knowledge in the humanities, social sciences, mathematics, natural sciences, and languages? How could these disciplines be formatted so that future English teachers can assist children and youth achieve competency in technical communications in an EC economy? How can future teachers in Business Education and Data Processing assist youth, and adults in evening school, acquire EC technical skills for employment for prime and subcontractors?

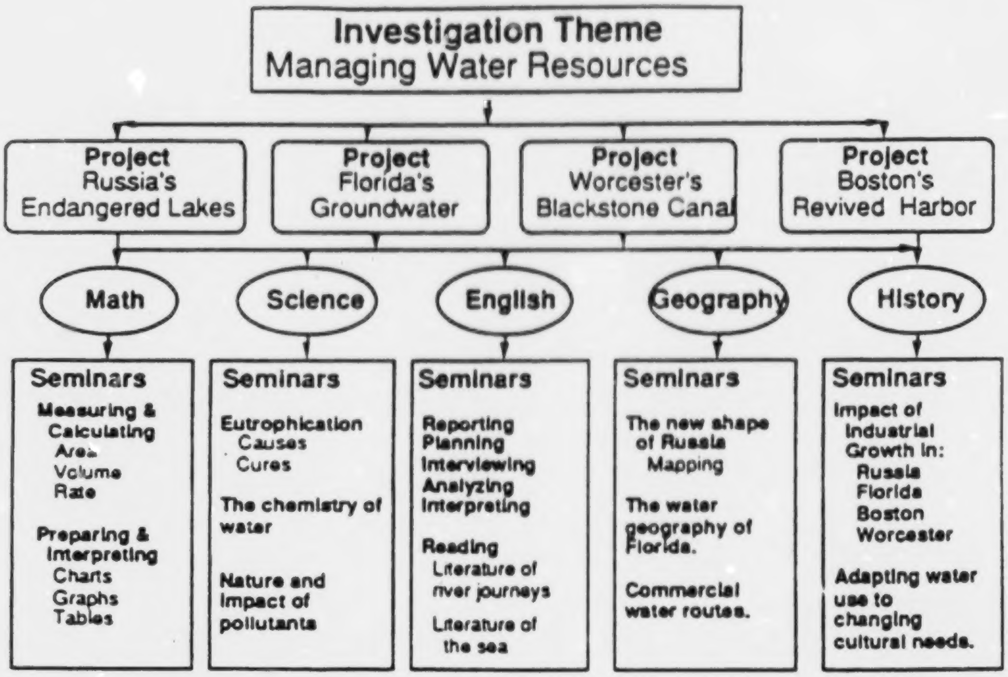
A bigger challenge is the modernization of colleges and schools to meet workforce - workplace needs relative to EC. What is the technology plan, within the strategic plan, for modernizing classrooms and laboratories for EC? A greater challenge is the **RETHINKING** for **RESTRUCTURING** through a thematic problem solving paradigm using technology.

SHAPES OF KNOWLEDGE


HUMANITIES
HIGH
PERFORMANCE
LEARNER
WORKER
MATHEMATICS
LANGUAGES
NATURAL SCIENCES
SOCIAL SCIENCES

Change, March/April 1994, Vol.36, No.2, pp. 27-30

Co-NECT: Design for a New Generation of American School


Investigation Theme
Managing Water Resources
Project
Russia's Endangered Lakes
Project
Florida's Groundwater
Project
Worcester's Blackstone Canal
Project
Boston's Revived Harbor
Math
Science
English
Geography
History
Seminars
Measuring & Calculating
Area
Volume
Rate
Preparing & Interpreting
Charts
Graphs
Tables
Seminars
Eutrophication
Causes
Cures
The chemistry of water
Nature and impact of pollutants
Seminars
Reporting
Planning
Interviewing
Analyzing
Interpreting
Reading
Literature of river journeys
Literature of the sea
Seminars
The new shape of Russia
Mapping
The water geography of Florida.
Commercial water routes.
Seminars
Impact of Industrial Growth in:
Russia
Florida
Boston
Worcester
Adapting water use to changing cultural needs.

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HIGH PERFORMANCE LEARNERS AND LEADERS

Strategic Thinking:
Analysis, Vision, Action Plan (AVA)

Analysis

Strategic thinking includes analysis of the internal and external environments to co-create visions of the future. The assessment of the external environment must include economic and technological variables that are extrapolated into the future to add clarity to fuzzy visions. Visions creation requires **NEW HABITS OF HEART AND MIND** to break out of the mold of bureaucratic layered traditional formats and to move toward computer based online learning paradigms.

Vision

Co-creating visions of alternative futures should yield a conceptual framework of an **IDEAL** based on beliefs & values. Concensus must first be achieved on beliefs and values such as equal access to high quality programs at reasonable cost. The **IDEAL** contrasted with the **REAL** yields an **ACTION PLAN** to modernize and transform traditional institutions into 21st Century learning enterprises to meet world class benchmarks.

Action Plan

Concensus in beliefs & values in the mission statement must be transformed into a business plan with benchmarked goals and objectives, methodology and procedures and an evaluation plan to which fiscal resources are assigned, particularly in a cash flow "steady state" or in periods of retrenchment.

Competencies and Skills in Specializations

Strategic thinking competencies and skills will vary between the specializations and within a specialization. Computing and Information Technology (CIT) attracts professionals who are concerned primarily with the use technology to achieve student learning outcome; teachers of math and science may attempt to understand more fully how to use technology within their disciplines or in an interdisciplinary format. CIT also attracts individuals who are curriculum development and instructional support specialists. They often provide support to a broad array of disciplines in multiple formats. CIT also attracts individuals with administrative support functions that may require many varied client/server skills.

Competencies and skills for each of the five specializations should be specified. CIT competencies that are generic or unique to a concentration may be relevant under a technical category in another specialization. For example, Electronic Commerce (EC) is being mandated for government contracts. EC skills could be appropriate for several specializations. EC and Electronic Data Interchange (EDI) could be a series of learning modules online that are available in an open entry - open exit format for students and alumni.

HUMAN RESOURCES DEVELOPMENT

SPECIALIZATIONS **COMPETENCIES**

	CONCEPTUAL	INTERACTIVE	TECHNICAL
ADULT EDUCATION			
COMPUTING AND INFORMATION TECHNOLOGY			
HEALTH CARE EDUCATION			
HIGHER EDUCATION			
VOCATIONAL, TECHNICAL, AND OCCUPATIONAL ED.			

COMPETENCIES AND SKILLS
COMPUTING AND INFORMATION TECHNOLOGY

CONCENTRATION		
LEARNING: HUMAN RESOURCES DEVELOPMENT	CURRICULUM DEV & INSTRUCTIONAL SUPPORT	ADMINISTRATIVE SUPPORT FUNCTIONS
GENERIC		

Curriculum Development for Learning

Communication Skills

Communication skills are essential to literacy, productivity and democracy. What competencies are necessary for a High Performance Learner Leader to analyze reading, writing, speaking, and listening skills of students and/or workers? What competencies are necessary to co-create a vision of an IDEAL situation and co-develop a multi-year action plan with an evaluation plan or co-develop a short term program, then implement and evaluate the outcomes? What competencies are required to convert an existing high quality program to a computer based online learning format to deliver the program into community agencies, homes, and workplaces?

Math, Science, and Technology

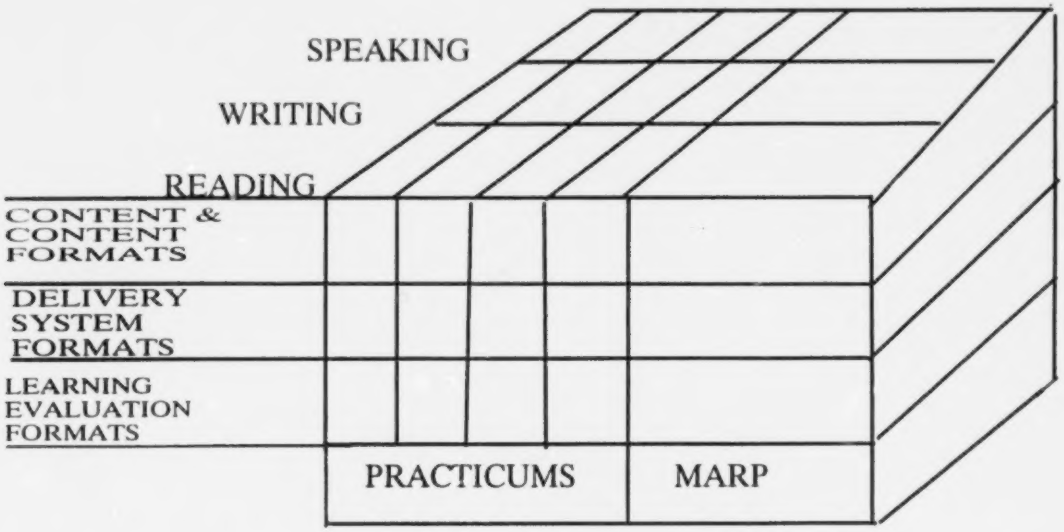
Competencies in math, science, and technology are critical to most of today's workplaces and will be more essential in the workplaces of the 21st Century. Math and science is one of the America 2000 goal categories. The United States ranks last or near last in math and each category of science when compared with other nations. It is hoped that American student will be first in math and science by the year 2000.

The National Assessment for Educational Progress (NAEP) indicates that only in four states do 25% of eighth grade students achieve minimum math proficiency (ND, IA, NE, MI). Even in the best states, 75% of the students are not math proficient. The percentage of some states is as follows:

			All	White	Black	Hispanic	Asian
ND	ranks	1st	30.6	32.9	N/A	5.6	N/A
IA	"	2nd	26.7	28.0	N/A	9.4	N/A
NE	"	3rd	26.6	29.4	2.0	5.3	N/A
MN	"	4th	25.4	27.2	5.9	3.3	17.6
NJ	"	7th	22.8	28.6	3.2	4.5	58.7
PA	"	12th	19.1	21.8	3.5	2.5	N/A
MD	"	16th	17.1	23.6	3.1	4.6	50.3
OH	"	20th	15.6	17.6	1.4	2.3	N/A
GA	"	22nd	14.7	21.7	3.0	2.0	N/A
CA	"	23rd	13.9	21.4	1.8	3.1	24.9
FL	"	26th	12.8	17.1	2.0	8.5	28.7
WV	"	30th	9.8	10.3	2.7	2.3	N/A
DC	"	35th	2.8	N/A	1.0	1.7	N/A

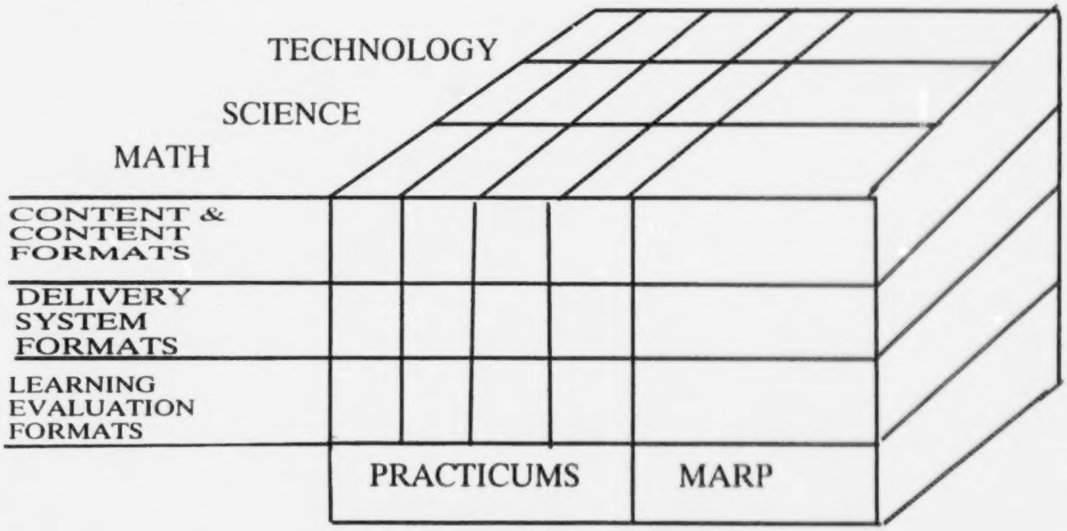
What competencies are necessary for a High Performance Learner Leader to analyze math, science and technology skills of students and/or workers? What competencies are necessary to co-create a vision of an IDEAL situation and co-develop a multi-year action plan with an evaluation plan? What competencies are required to co-create a high quality program in a computer based online learning 2+2+2 format? What competencies are required to co-create a computer based online technology education program and deliver it into community agencies, homes, other schools, and workplaces?

COMPETENCIES AND SKILLS
COMPUTING AND INFORMATION TECHNOLOGY
CURRICULUM DEVELOPMENT & INSTRUCTIONAL SUPPORT


SPEAKING
WRITING
READING
CONTENT & CONTENT FORMATS
DELIVERY SYSTEM FORMATS
LEARNING EVALUATION FORMATS
PRACTICUMS
MARP

MARP - Major Applied Research Project

COMPETENCIES AND SKILLS
COMPUTING AND INFORMATION TECHNOLOGY
CURRICULUM DEVELOPMENT & INSTRUCTIONAL SUPPORT


TECHNOLOGY
SCIENCE
MATH
CONTENT & CONTENT FORMATS
DELIVERY SYSTEM FORMATS
LEARNING EVALUATION FORMATS
PRACTICUMS
MARP

MARP - Major Applied Research Project

Know-How and Technology

The "Curriculum Development for Learning" section identified literacy, productivity, and democracy as learning outcomes for communications skills. The "means" for achieving those ultimate purposes include know-how and technology. Know-how is a generic label that includes basic research applied in a variety of contexts to lead to conclusions about what works.

Technology includes a full range of hard - soft categories. Many institutions began to modernize through technology in the late 1970s and early 1980s (Computers Serving Students: The Community College Way, Leslie, 1986). Articulation and open entry - open exit programs began to emerge and mature. States began to plan and build networks and technological infrastructure for education and training -- Iowa in 1989; Georgia in 1992; and Maryland, Kentucky and North Carolina in 1993. North Carolina began an ambitious plan to link 18 university campuses, 18 community colleges, and 52 high schools during the first year of plan implementation.

Students' projects combine know-how and technology in unique ways. Cultural diversity literacy is essential to viability in a global village. Dr. Alan Algee synthesized research on intercultural competency to co-develop a seven step infusion model at Faith School of Theology; he also applied project management techniques to creating the report (ED 389 890). Dr. Judith Hatula synthesized a great deal of research to co-create a Human Resources Development strategic plan for Telecom Finland, Inc., restructured from a restricted state utility to a free market, privatized, unrestricted utility. Dr. Chong-Sun Hong co-created a strategic plan to teach English more effectively and efficiently at Hankuk Aviation University, South Korea. Dr. Normal C. Hintz co-created a strategic plan for attaining and maintaining collaborative relationships that will be even better than the high level gown-town relationships that exist between Flagstaff and Northern Arizona University; NAU became a "communiversity" several years ago via networking throughout Arizona and could easily become a globalversity (see Attachment).

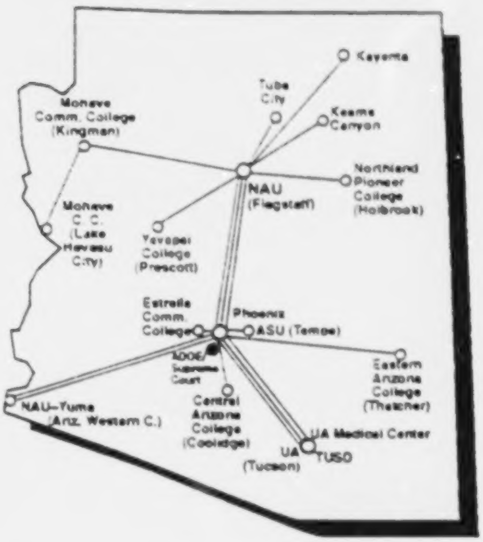
Dr. Terrence H. Overlock synthesized research to co-create a multiyear plan for the integration of multimedia technology in the environment at Northern Maine Technical College. NMTC could become the hub of articulated 2+2 or 4+2 online programs with some of the 36 school districts in the area. Dr. Oscar Vazquez-Melendez co-created a distance learning model in Spanish to prepare Hispanic migrant farmworkers in the five GED subject areas of writing skills, literature and the arts, social studies, science, and mathematics. Dr. Kenred Christian created an open learning system at the University of Technology, Jamaica. Dr. Shirley Waterhouse co-created a strategic plan for faculty technology resources at multiple sites for Embry-Riddle Aeronautical University.

NORTHERN ARIZONA UNIVERSITY

NAUNET AND NAULA

ACCESS THROUGH INFORMATION TECHNOLOGY

NAUNet Current/Planned System *


Kayenta
Tuba City
Keams Canyon
Mohave Comm. College (Kingman)
Northland Pioneer College (Holbrook)
NAU (Flagstaff)
Mohave C. C. (Lake Havasu City)
Yavapai College (Prescott)
Estrella Comm. College
Phoenix
ASU (Tempe)
ADOE/ Supreme Court
Eastern Arizona College (Thatcher)
NAU–Yuma (Ariz. Western C.)
Central Arizona College (Coolidge)
UA Medical Center
UA (Tucson)
TUSD

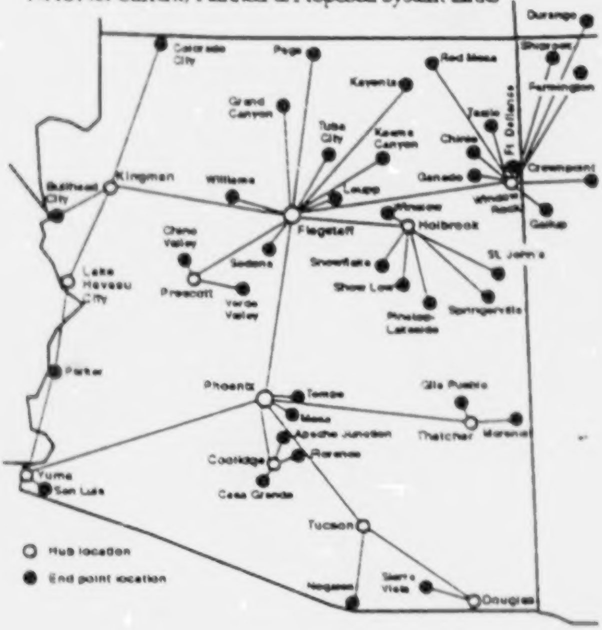
NAUNet Telecommunications Network

NAUNet is a full duplex interactive microwave network. Multiple sites can interconnect with one another on the network. The first instructional sites in Flagstaff and at the NAU Center in Yuma, Arizona were completed in December 1989, followed by sites in Phoenix (ADoE/Supreme Court), Kingman (Mohave Community College), Tempe (ASU), Tucson (U of A), and Holbrook (Northland Pioneer College). Sites on the Navajo and Hopi Reservations go on-line in 1994 with the second year of support from the U.S. Dept. of Commerce's NTIA. Additional sites are planned for the following years. The system is fully interactive, and NAU plans to include T-1 data and telephony services on many circuits.

nauLA and the Satellite System

The Northern Arizona University Learning Alliance (nauLA) is a voluntary alliance of more than 100 satellite downlink, cable and wireless cable sites across Arizona for the delivery of statewide programs. Supporting nauLA is a C-band satellite transmission (uplink) system. The uplink, completed in 1990, has capability for transmission to areas that cover the contiguous 48 United States. NAU is also a founding member of IDEANET, a nationwide distance education alliance.

NAUNet Current/Planned & Proposed System Links


Durango
Colorado City
Page
Red Mesa
Shiprock
Farmington
Kayenta
Grand Canyon
Tuba City
Keams Canyon
Tseile
Ft Defiance
Chinle
Crownpoint
Ganado
Window Rock
Bullhead City
Kingman
Williams
Leupp
Winslow
Flagstaff
Holbrook
Gallup
Chino Valley
Sedona
Snowflake
St. John's
Lake Havasu City
Prescott
Verde Valley
Show Low
Pinetop-Lakeside
Springerville
Parker
Phoenix
Tempe
Gila Pueblo
Mesa
Apache Junction
Thatcher
Morenci
Florence
Coolidge
Yuma
San Luis
Casa Grande
Tucson
Hub location
End point location
Nogales
Sierra Vista
Douglas

Interactive Television Classrooms and Control Rooms

Four interactive classrooms at NAU, two at NAU–Yuma, one at each of the other NAUNet sites, and sites at ASU, UA, and ADoE are fully operational for course delivery, and currently average 50 university credit courses of instruction each semester. Additional classrooms are under construction. The control rooms for each classroom are configured to be "user transparent." Operators using the control rooms may move from one to another with complete ease.

Television Master Control and Production/Postproduction Facilities

The on-campus center of the communications system is the broadcast quality television production studio and postproduction facility, and Master Control for NAUNet–Flagstaff, the campus-wide NAU cable television system, the "feed" to Warner Cable Channel 4 in Flagstaff, and a satellite reception facility that has Ku-Band and C-Band downlink (receive) antennas. The Phoenix hub for NAUNet is located at American Television Relay (MCI).

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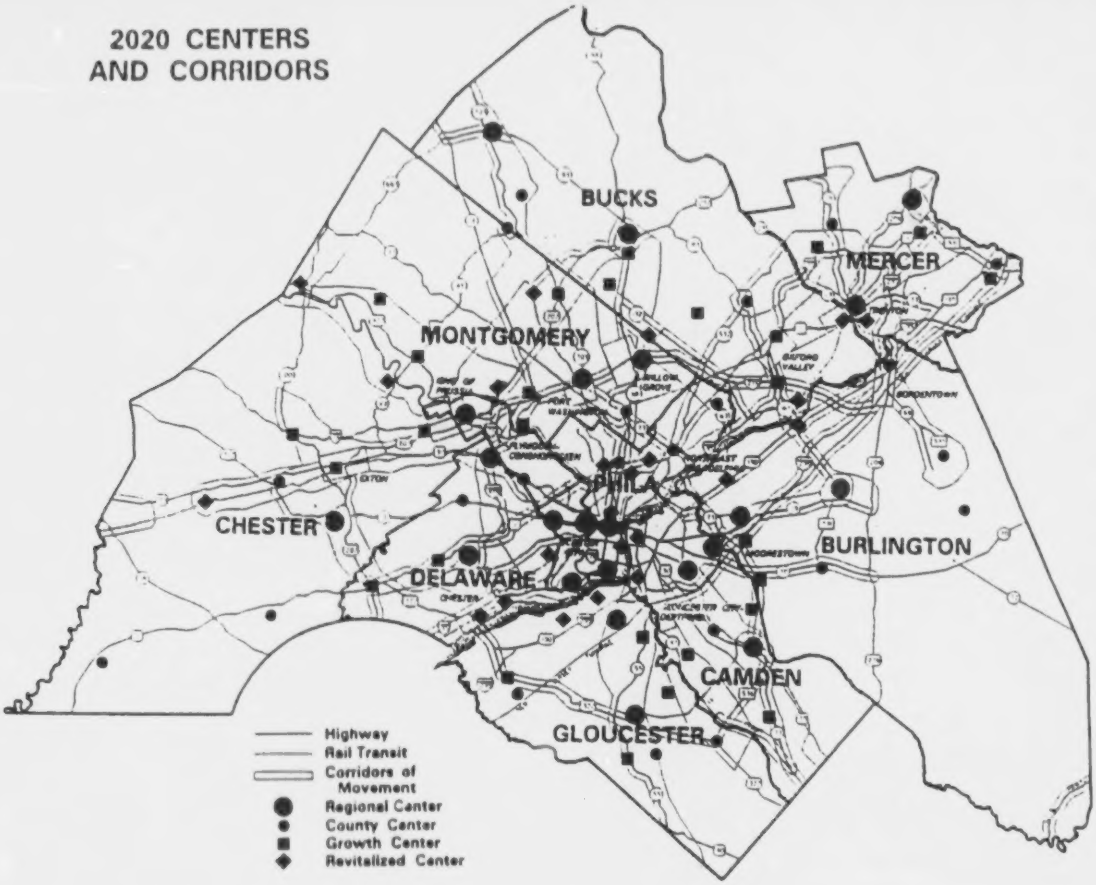
A CITYSTATE "KEYSTONE" LEARNING PARADIGM FOR 2020

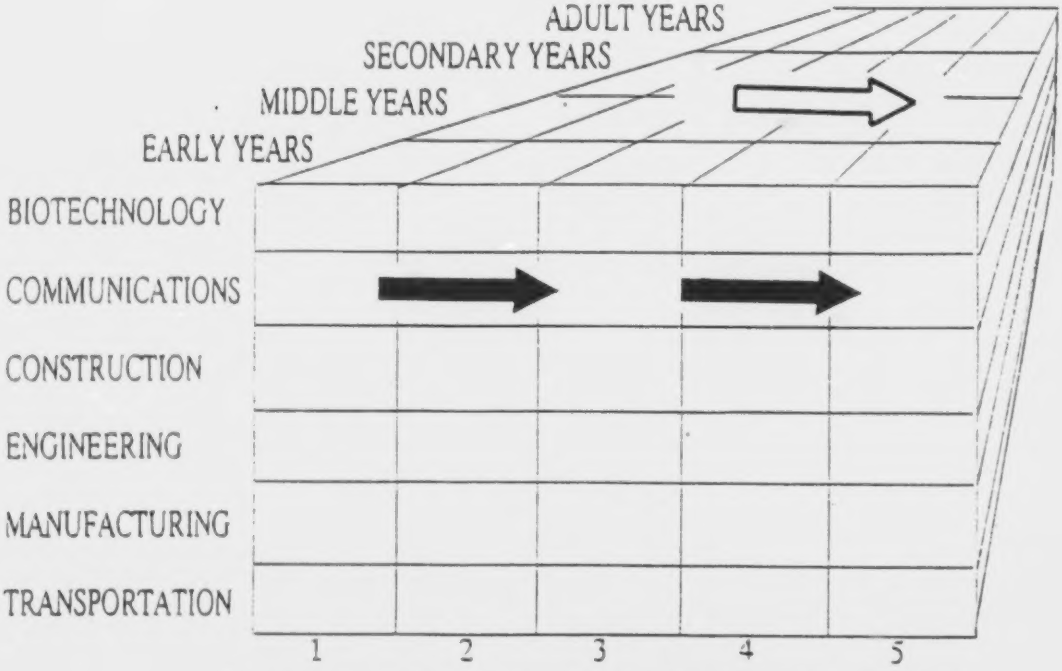
Keystone is the central stone bearing the pressure of other stones in an arch or a bridge. Pennsylvania was a "Keystone" when the original 13 colonies declared their independence from the "old world" traditions. **"New Habits of Heart and Mind"** were adopted for a fledgling new world. Pennsylvania was a key turning place in an internal struggle about dignity, humanity, and rights. Pennsylvania is where "plain folk" created the first **"Historically Black College."** "New Habits of Heart and Mind" were adopted for equality. "Reinventing the Region" provides insights into the Greater Philadelphia Citystate infrastructure (Peirce and Johnson, 1995). "Creating Globally Competitive Communities" states that "The 21st Century belongs to jurisdictions that put export-driven manufacturing at the core of balanced economic growth to maximize their quality of life (Bowes, 1996).

The Greater Philadelphia Citystate is emerging as a Keystone in the 21st Century global village and is a unique context to envision a **Cyberglobal Learning Paradigm**. First, the Greater Delaware Valley is the "Cradle of Liberty" that gave birth to the Info Era through the Electronic Numerical Integrator And Computer (ENIAC), now celebrating its 50th birthday. Second, the Delaware Valley Regional Planning Commission has identified "2020 Center and Corridors." Third, the Ben Franklin Technology Center (BFTC) of Southeastern Pennsylvania promotes economic development; it is located at the University City Science Center. Fourth, the Eastern Technology Council has numerous exciting initiatives including a major technology transfer project. Fifth, Governor Ridge has (a) assistance from a blue-ribbon group to produce "Technology 2000" and (b) created a three year $121 million education technology initiative. Sixth, Unisys has (a) pioneered a "customerize" program that moves customers to the center of the enterprise and (b) installed equipment in selected elementary schools nationwide as part of the three year $6 million Science Learning Network project with support from the National Science Foundation. Seventh, CIGNA is a global leader in Electronic Commerce.

What type of **VISIONING** process can be implemented to specify competencies and skills of High Performance Learner Workers in 2020? What are the competencies and skills of an Electronic Commerce technician or professional? What skills are needed to access databases from the Business Information Center at BFTC, or Knowledge Express? What could be the role of the Center for the Study of Connectivity and Data Bases at West Chester University? What type of action plan can be specified to build on strengths of the colleges and schools that will lead to a reengineered borderless and seamless learning paradigm for multiple intelligences? What high quality online delivery systems can be analyzed?


2020 CENTERS AND CORRIDORS
BUCKS
MERCER
MONTGOMERY
PHILA
CHESTER
DELAWARE
BURLINGTON
CAMDEN
GLOUCESTER
Highway
Rail Transit
Corridors of Movement
● Regional Center
● County Center
■ Growth Center
◆ Revitalized Center

BORDERLESS & SEAMLESS SOLUTION BASED LEARNING


ADULT YEARS
SECONDARY YEARS
MIDDLE YEARS
EARLY YEARS
BIOTECHNOLOGY
COMMUNICATIONS
CONSTRUCTION
ENGINEERING
MANUFACTURING
TRANSPORTATION
1
2
3
4
5

CONTINUOUS QUALITY IMPROVEMENT BENCHMARKS
TO PRODUCE HIGH PERFORMANCE LEARNER WORKERS

Celebration and Education Online

Celebration is a new high tech community of the future in Florida that is being developed by Walt Disney and AT&T. "Greater Orlando Resources and Links" and Central Florida Consortium of Higher Education hold great potential for becoming a Cyberglobal Learning Paradigm (see Appendix A).

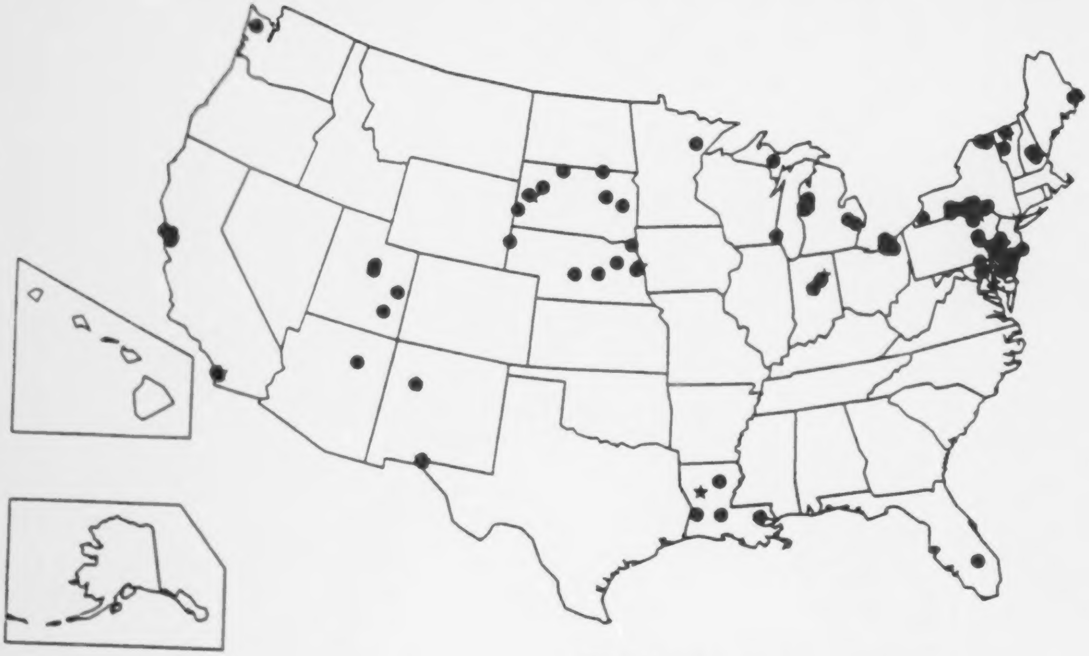
New world class Human Resources Development systems will be required to produce a critical mass of intellectual capital and high performance learners and workers for the new era. The second annual Corporate University Forum held in April was designed to help participants learn how to create, launch, market, and run a corporate university. Pre-forum seminars included "Using Technology to Develop a World-Class Learning Environment" and "Preparing Your Strategic Plan."

The International University College is celebrating its first anniversary. The April/May 1996 "IUC insider" featured the BA in Business Communications with courses in "Public Speaking," "Fundamentals of Business Writing," "Organizational Communications," "New Communications Technologies," and "Ethical Issues in Communications." The Master's program in Business Communications already has students from 21 states and Antigua, Bardados, Canada, and Germany. "Learning outcomes" are a hallmark of IUC courses at the undergraduate and graduate levels.

Governors of 11 western states agreed to explore co-creation of a "virtual university" that would deliver courses through computer networks, television, and other technologies (The Chronicle of Higher Education, December 15, 1995, p. A19). Teams were assembled to analyze alternative approaches to distance education that make use of contemporary technology. Best Practices in Implementation of Advanced Educational Technologies contains an analysis of 18 diverse approaches. "The Western Governors University: A Proposed Implementation Plan" was reviewed by the Governors in June. The plan was based on several documents that can be accessed via WWW:

1. "Best Practices in Implementation...."
   (http://www.wiche.edu/telecom/technology.htm)
2. "Constructing a Virtual Catalog...."
   (http://www.wiche.edu/telecom/catalog.htm)
3. "Request for Proposal:...Quantitative Reasoning Skills"
   (http://www.wiche.edu/telecom/rfp.htm)

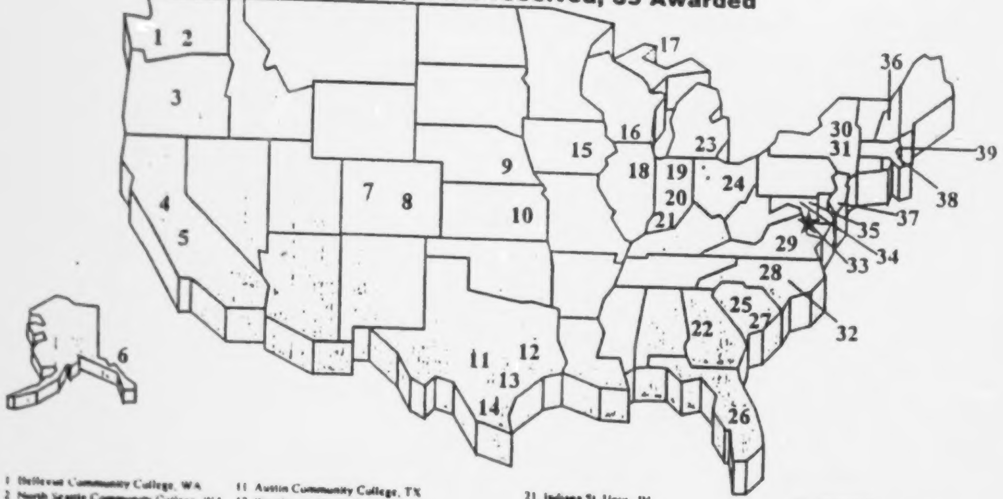
Cyberglobal learning paradigms will evolve. A few colleges and universities have been developing more flexible delivery systems and more institutions will do so very soon. Schools are being aided in the use of technology through Challenge Grant Awards and colleges are benefitting from Advanced Technology Education Awards. The Technology Literacy Challenge Fund will accelerate online systems development.



Challenge Grant Awards

● 134 Partner School Districts ★ 19 Challenge Grant Districts

1995 ATE Awards to Institutions
115 Proposals received, 39 Awarded



1 Bellevue Community College, WA
2 North Seattle Community College, WA
3 Chemeketa Community College, OR
4 De Anza College, CA
5 Los Rios Community Col Sys Distr., CA
6 Univ. Alaska SE Juneau, AK
7 CO Community Col & Occup Ed St, CO
8 Front Range Community College, CO
9 Southeast Community College, NE
10 Kansas St. University, KS
11 Austin Community College, TX
12 Rio Grande Center Manu., TX
13 Texas St. Tech. Institute -Waco, TX
14 Texas St. Tech. Institute -Harlingen, TX
15 Hawkeye Community College, IA
16 Madison Area Tech. College, WI
17 Wayne St. Univ., MI
18 Northern Illinois Univ., IL
19 Indiana Univ. Purdue, IN
20 Rose-Hulman Institute of Tech., IN
21 Indiana St. Univ., IN
22 Univ. of Georgia, GA
23 Michigan Tech. Univ., MI
24 Stark Tech. College, OH
25 Piedmont Tech. College, SC
26 Seminole Community College, FL
27 Trident Tech. College, SC
28 NC Bd. of Community Colleges, NC
29 Nat. Assoc. of Bio Teachers, VA
30 SUNY Adirondack Community College, NY
31 CUNY, NY
32 Regional Tech. Strategies, NC
33 Georgetown Univ., DC
34 Prince George's Community College, MD
35 John Hopkins Univ., MD
36 Keene State Univ., NH
37 Middlesex County College, NJ
38 Wentworth Institute Tech., MA
39 New England Bd. of Higher Ed., MA

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IMPLICATIONS FOR PROGRAMS FOR HIGHER EDUCATION

Continuing Education for Graduates

Many students chose Nova because of an image established several years ago that was on "the student as the class" and innovative approaches to nontraditional education. Nova has helped professionals produce high quality strategic plans that are being implemented in foreign countries and the U.S.

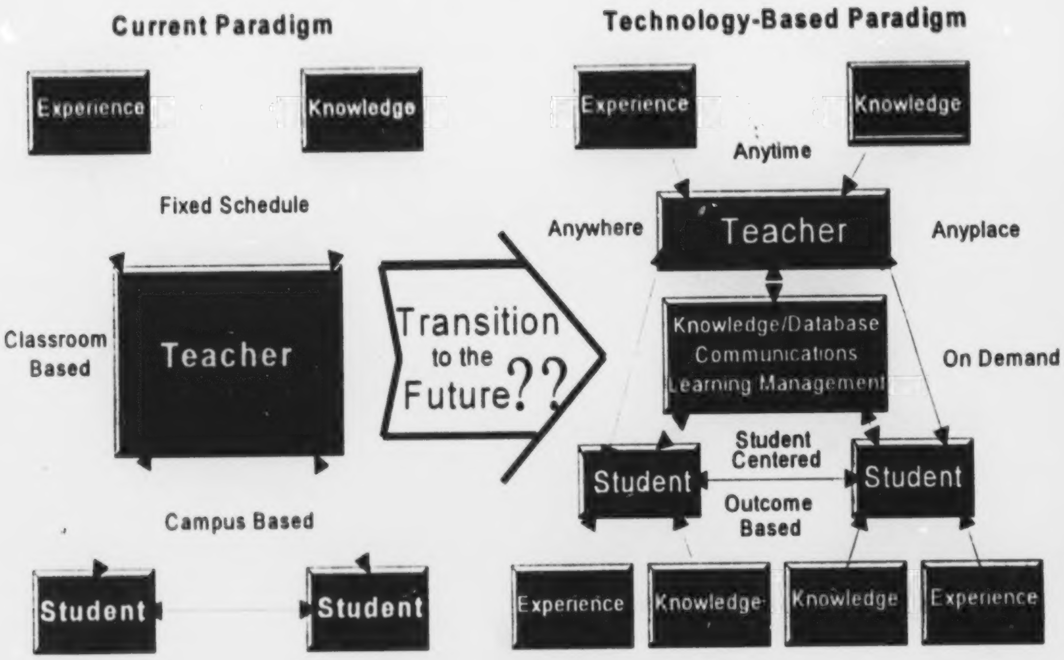
Dr. Yng-chien Sheu has completed the first year of the Graphic Arts and Printing Technology Department at National Taiwan Normal University. The GAPTD could create learning modules and distribute them electronically throughout Taiwan and offshore when fully developed. The strategic plan for the GAPTD became a support document to create six Asian Pacific Centers that will be operational in a few years:

1. Cargo transfer center in Kaohsiung,
2. Finance center in Taichung,
3. Manufacturing center in Yunglin,
4. Air transportation center in Taoyuan,
5. Communication center in Taipei, and
6. Media center (printing and video) in Taipei.

In addition, "The Taiwanese government will establish 100 industrial zones in developing Asian and Latin American countries to help Taiwanese manufacturers relocate their operations offshore and diversify their investment base. Over the next year, the government will focus on 10 zones - one each in Guatemaula, Honduras, El Salvador, Nicaragua, Costa Rica, Indonesia, India, and the Philippines, and a pair in Vietnam" (World Trade, July 1996, 9 (7), p. 74).

Dr. Chong-Sun Hong analyzed contemporary know-how about best methods to improve English competence to create a strategic plan for instructional, organizational, and human resources development through technology (see Attachment for a plan). As head of a Foreign Language Department at Hankuk Aviation University, she can influence multiple language development at all levels. The innovative approaches could be the basis of an online 2+2+2 for feeder schools and colleges and for continuing education to corporations within South Korea. Networking to other countries is possible in a short period.

NSU has a unique opportunity to be responsive to the needs of professionals in South Korea, Taiwan, and Asia Pacific. The NSU International Task Force is developing a mission statement for International Programs and Activities. The mission statement can provide a conceptual framework for strategic directions followed by a vision and action plan with program development details. The two above-mentioned professionals are exemplary in the work they are doing. The projects are wonderful economic development and human resources development opportunities for a globalversity. Numerous domestic opportunities will be discussed later.


Current Paradigm
Technology-Based Paradigm
Experience
Knowledge
Experience
Knowledge
Anytime
Fixed Schedule
Anywhere
Teacher
Anyplace
Classroom Based
Teacher
Transition to the Future??
Knowledge/Database Communications Learning Management
On Demand
Student Centered
Student
Student
Outcome Based
Campus Based
Student
Student
Experience
Knowledge
Knowledge
Experience

CHANGING PARADIGMS

Overlock, T.H. (1995). Development of a multiyear plan for the integration of technology into the learning environment at Northern Maine Technical College. Fort Lauderdale, FL: Unpublished major applied research project, Nova Southeastern University.

Note. Adapted from Branson, R.K. (April, 1990). Issues in the design of schooling: Changing the paradigm. Educational Technology, 30, 7-10

MULTI YEAR PLAN
English - Hankuk Aviation University

To Attain, Maintain and Seek Continuous Quality Improvement in English

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Freshman English – a. Reading b. Writing c. Listening d. Speaking	1. SEQUENCE OF INCREASED COMPETENCIES IN BASIC ENGLISH 2. STAFF REQUIREMENTS (Skills, Number) FOR #1 3. TECHNOLOGY REQUIREMENTS FOR #1 AND #2 4. ORGANIZATIONAL DEVELOPMENT FOR #1, #2, #3				
Sophomore English – a. Reading b. Writing c. Listening d. Speaking	1. SEQUENCE OF INCREASED COMPETENCIES – "ENDS" 2. STAFF – Means #1 3. TECHNOLOGY (Know-How and Software/Hardware) - Mean #2 4. ORGANIZATIONAL DEVELOPMENT - Means #3				
Jr. and Sr. Year English	1. SEQUENCE OF INCREASED COMPETENCIES 2. STAFF 3. TECHNOLOGY (English Voice Activated ?) 4. ORGANIZATIONAL DEVELOPMENT - (Ope. Entry - Open Exit Lab?)				
Grad School English - - - - - - - - - - - - - School Partnerships	1. COMPETENCIES - STUDENT LEARNING OUTCOMES (Ends) 2, 3, &4 – STAFF, TECHNOLOGY AND ORGANIZATIONAL DEVELOPMENT (Means) - SECONDARY AND POST-SECONDARY - TECHNOLOGY EDUCATION HOW NSU CAN HELP (CYS, NEL, PHE)				
Distance Learning Multi- tech Format	1. NEEDS ASSESSMENT AND TECH INFRASTRUCTURE ASSESSMENT 2. STAFF DEVELOPMENT 3. TECHNOLOGY 4. PROGRAM DELIVERY				
Collaborative Agreements and Partnerships	– AEROSPACE INDUSTRY IN UNITED STATES ELSEWHERE – ENGINEERING INDUSTRY IN UNITED STATES ELSEWHERE – AEROSPACE AND ENGINEERING HIGHER EDUCATION – McGRAW-HILL ON-LINE, OTHER				

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Creating Online Learning Communities

Online sessions within Leadership I seminars at the start of a doctoral program were considerably easier than online sessions within Leadership II at the end of the third year of the didactic component of the program. Online advising at the dissertation level is more difficult than anything this writer has ever experienced in individualizing service delivery. Professionals vary considerably on all variables. First, each professional had a unique set of learning experiences/patterns in the didactic seminars and in their practicums. A few professionals progressed through the program by taking the seminars in sequence and then completing the practicums and other professionals completed practicums while taking seminars and sometimes also availed themselves of electronic library and other online services. Second, each professional works in a context with various problems and issues that are unique. Third, learning styles and personal problems vary with each person and must be considered in customizing the learning sequence from idea to prospectus, to proposal, to project, and then to report. Fourth, professionals vary from a minimum awareness about technology to high levels of technological proficiency.

Nova must accelerate the development of computer based online learning both in the didactic and problem solving components of the doctoral programs in the Fischler Center for the Advancement of Education (FCAE). Although the three doctoral programs differ in clientele and format, there are some similarities among them and other programs at NSU. Are professionals enrolled in all three doctoral programs working on projects that deal with curriculum development in areas of (a) communications skills or (b) math, science, and technology? If so, what are the commonalities and how could human and technological resources be leveraged to benefit professionals in all three programs? Beyond a content or discipline focus, are there areas of curriculum development or learning and Human Resources Development common to all? Curriculum consists of three components: (a) content and content format, (b) delivery system format, and (c) outcomes evaluation formats. What are the competencies and skills that are needed to produce a **High Performance Learner Worker in Electronic Commerce** in a K-16 seamless program? Can the competencies be acquired at home or workplace and competency be evaluated via portfolio or in a service learning format? "Computers" merit badge is an example of a "non-schooling" curriculum that leads to competency. "Electronic Document & Printing Professional (EDPP)" certification via portfolio by The Electronic Document Systems Association is an example in industry. Can a comparable format be designed and implemented in FCAE? Learning online can be qualitatively superior to traditional methods due to access to human and technological resources. How can technology be exploited to enhance access and quality and improve efficiency?

COMPUTER BASED ONLINE LEARNING

	CONTEMPORARY	NEXT GENERATION
POLICY		
MISSION PRIORITIES		
STRATEGIC ALLIANCES		
CURRICULUM STUDENT LEARNING OUTCOMES		
TECHNOLOGY		
HUMAN RESOURCES DEVELOPMENT		
FISCAL RESOURCES		

LESSONS LEARNED FROM ONLINE FORMAT

	FIRST DIDACTIC SEMINAR	PROBLEM SOLVING APPLICATION	LAST DIDACTIC SEMINAR	PROBLEM SOLVING APPLICATION	ALUMNI CONTINUING DEVELOPMENT
CONTENT & CONTENT FORMAT					
DELIVERY SYSTEM FORMAT					
PERFORMANCE APPRAISAL FORMAT					

Sustaining and Expanding Learning Communities

"If you become a teacher, by your students you'll be taught" is most appropriate for a journey into a new paradigm. Electronic classrooms (ecrs) were conducted for advisees during the fall quarter 1995. Ecrs were supplemented by memos sent to all MARP advisees (Groff, 1996, ED 389 890). Over 50 free periodicals were requested from publishers for all advisees, HRD faculty, and others Just-In-Time (J-I-T).

Terry Overlock became technologically proficient with electronic library because of interest and out of necessity because of geographic isolation and "International Cluster" program format. Terry benefitted by taking Human Resources Development with the Tampa Cluster and then later hearing Christine Loftin describe her plan of topics for practicums and her major applied research project. Terry became an active member of the ecrs because he had benefitted from collaboration through e-mail. He shared his experiences with peers, including his four practicums in ERIC.

Phillip Davis was an active participant in ecrs and was the first person to use TALK. He made his MARP proposal available online. The proposal can be accessed as follows:

http://alpha.acast.nova.edu/~davisp or

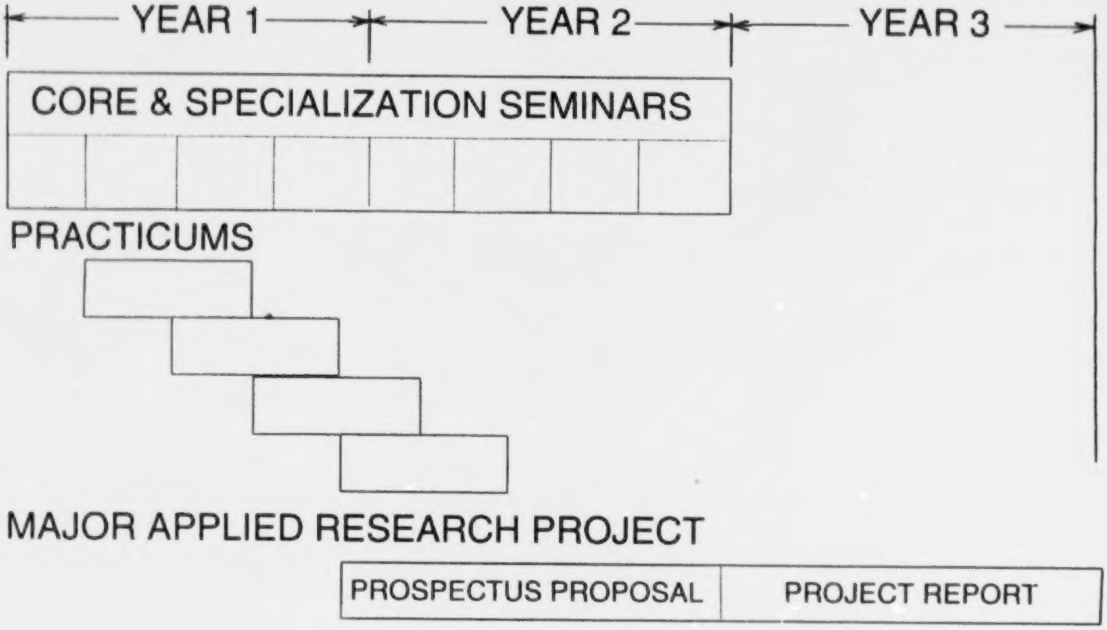
lynx http://alpha.acast.nova.edu/~davisp

He will make his project report available electronically. His project was The Development of a Multimedia Online Course and a Plan for Its Evaluation for Del Mar College (Texas). You may want to try to access his proposal.

Many professionals shared their experiences with peers as they progressed from ideas to prospectus, to proposals, to projects, and to reports. Collaboration was high because of many variables including the complexity of projects that deal with human resources development and new technology. Kay Delk provided a copy of "Bibliographic Formats for Citing Electronic Information" and "Guidebook for Developing an Effective Instructional Technology Plan" by Larry Anderson. She provided the information about the "Greater Orlando Resources and Links" that is located in Appendix A. Karen Hoblit, Althea Stevens, and Judith Vallery made numerous contributions during ecrs and then attended to follow through commitments. Professionals have access to a bewildering array of resources for which guides are useful. Wardine Wood will create a HRD strategic plan based on a survey of 1,700 missionaries serving in 140 countries.

HRD systems that are emerging are based on basic research of the Cognitive Sciences and Communication Technologies. How can we understand more fully multiple intelligences of culturally diverse people and their unique contribution in learning communities? What databases and networks are essential to co-create better, more efficient HRD paradigms?

A. PATTERN OF DEGREE COMPLETION
(TRADITIONAL FORMAT)


YEAR 1
YEAR 2
YEAR 3
CORE & SPECIALIZATION SEMINARS
PRACTICUMS
MAJOR APPLIED RESEARCH PROJECT
PROSPECTUS PROPOSAL
PROJECT REPORT

PRACTICUMS

BENCHMARKING CONTINUOUS QUALITY IMPROVEMENT

REPORT COMPONENTS	PRACTICUM #1	PRACTICUM #2	PRACTICUM #3	PRACTICUM #4
INTRODUCTORY INFORMATION				
CHAPTER 1				
CHAPTER 2				
CHAPTER 3				
CHAPTER 4				
CHAPTER 5				
APPENDIXES				

The above-mentioned professionals were joined periodically by a few peers enrolled in Human Resources Development in the Western Pennsyvlania Cluster, peers doing practicums, and a few cluster coordinators and staff. Students enrolled in seminars or working on practicums have needs similar to individuals working on major applied research projects. All professionals attempt to add clarity to problems in terms of context and substance. All professionals analyze bodies of information. All professionals pursue procedures. Collaboration between professionals working on practicums and major applied research projects could improve the quality of products and efficiency in completion of degrees.

James E. Barger is coordinator of business and marketing education at Virginia Beach Public Schools. He completed an excellent practicum in February that could be valuable to many other professionals enrolled in several programs within Nova Southeastern University (see Appendix B). Practicum proposals or reports could be made available electronically. Futhermore, making high quality work by enrollees provides access to more providers and adds integrity to the program.

Virginia Moody is completing her major applied research project proposal on Creation and Validation of a Strategic Plan to Offer An Accredited Program for Federal Employees. Her project will include an analysis of the above-mentioned and other domestic programs of institutions belonging to the University Council for Educational Administration. The University completed a program review and developed a conceptual framework with "Policy Studies" as the core for the conceptual framework. Virginia will also analyze initiatives by the European Association of Distance Teaching Universities and institutions in Asia Pacific. For example, the Open Learning Institute (OLI) of Hong Kong begun in 1989 has an enrollment of 20,000 adults studying in four academic schools, namely, Arts and Social Sciences, Business and Administration, Science and Technology, and Education and a Centre for Continuing and Community Education. Thus, while Virginia is engaged in her strategic planning project, she will provide a flow of insights about alternative programs.

What is the core conceptual framework for doctoral programs in the FCAE generally and PHE specifically? What are the generic learning outcomes graduates are expected to have? What should be the learning outcomes of specializations? How can all enrollees attain minimum CIT competencies and skills about databases and networks and then maintain skills in a collaborative online learning community format, J-I-T?

What the Public Wants from Higher Education provides insights into strategic directions that can be pursued (Dillman, 1995). One strategy is computer based distance learning online in an open entry - open exit format leading to a Certificate for Advanced Graduate Study.

HRD

MIND	SYSTEMS
Persons	*Databases*
Communities	Networks

THE COMMUNICATION SYSTEM

	INPUTS	PROCESSES	OUTPUTS
HUMANS			
MACHINES			

CONCLUSION: Change, CHANGE, and CHANGE

The 1995-96 year was full of **RETHINKING** activity surprises. Who would have anticipated that Lou Gerstner would address the National Governors' Association at the meeting in July, 1995, and essentially tell them to do a better job in running their business in the shift from an education industry to creative learning enterprises? Who would have anticipated that the governors and other state leaders would address so many issues at the "Federalism Summit: Reststoring Balance in the Federal System?" Who would have anticipated that a group of governors would launch "SmartStates" and commit to a Western Virtual University? Who would have imagined that numerous members of the Organisation for Economic Co-operation and Development would accelerate global economic development initiatives that are yielding both collaboration and competition among members of the European Association of Distance Teaching Universities? Who would have imagined that the 49 business leaders and 41 governors would meet at the IBM headquarters in March to elevate education as a priority on the national agenda and share perspectives about world class standards initiatives in the states? Who would have imagined that Apple Computer would host the "California 2001 Executive Partnership Summit" on May 14 to discuss business-education partnerships to help increase worker productivity and economic growth through technology and invite anyone to downlink the summit or access some of the information on the World Wide Web. Change, CHANGE, and CHANGE -- faster rate, greater scope.

* * * * * * * * * *

HIS Will Be Done

Spiritual Gifts

"Now concerning spiritual gifts, brethern, I would not have you ignorant. There are different kinds of gifts, but the same Spirit. To one there is given through the Spirit the message of wisdom, to another the message of knowledge by means of the same Spirit, to another faith by the same Spirit, to another gifts of healing by that one Spirit, to another miraculous powers, to another prophecy, to another distinguishing between spirits, to another speaking in different languages, and to still another the interpretation of languages" (I Corinthians 12: 1, 4, 8-10).

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APPENDIXES

A. National Information Infrastructure Initiative
B. Sustaining Learning Communities Newsletters
C. Seminar Papers, Practicums, and Dissertations

* * * * * * * * * *

A "Third Wave" Electronic College

Judith W. Leslie uses Toffler's The Third Wave to develop an educational institution in an advanced technical era dominated primarily by electronic media.

> This methodology would allow the learner to proceed at his/her own rate and style, within his/her own time period, at his/her desired location, drawing upon learning materials from throughout the country and the world. Computer science and electronics courses and programs of study would be an integral part of the curriculum. Faculty would be cross-trained in a variety of disciplines and teaching styles. They would have flexible work schedules and loads and might share an assignment with a spouse or colleague. Many faculty would instruct from their home or electronic cottage....
>
> Judith W. Leslie. "As The Third Wave Approaches Higher Education: Planning For the Electronic Institution," CAUSE/EFFECT, January 1981, Vol. 4, No. 1, p. 15.

* * * * * * * * *

AN EXCELLENCE BLUEPRINT

> We'll either move ahead to a high wage, high skill, high growth economy or we will be left behind...to compete with the Third World countries that call for little but strong backs and low wages.
>
> Governor Zell Miller, Georgia
> America 2000 Leadership Conference
> January 13, 1992

* * * * * * * * *

We are made wise not by the recollections of our past
but by the responsibility for our future.

George Benard Shaw

APPENDIX A

National Information Infrastruature Initiative

The "Organization of the U.S. National Information Infrastruature Initiative" is based primarily in the U.S. Department of Commerce. Several federal programs contribute to the design of the NII and the dissemination of know-how as well as technology for its development and utilization. The Federal Laboratory Consortium consists of 600 research and development facilities create a great deal of knowledge along with the Advanced Technology Programs and the National Science Foundation Supercomputer program. The National Technology Transfer Program accelerates the dissemination of new knowledge to a broad range of consumers.

Centers for International Business Education and Research (CIBERs) were created at 25 universities under the Omnibus Trade and Competitiveness Act of 1988 to increase and promote the nation's capacity for international understanding and competitiveness. Centers serve as regional and national resources to business, students, and academics. Centers information is in this Appendix.

Two CIBERs are also the home of the Governor's School for International Studies for gifted/talented youth. Students are given a core of information and, in one case, they can concentrate in one of the Big Emerging Markets (BEM).

The federal government began funding the Electronic Commerce Resource Centers (ECRC) program at 11 centers in 1992. ECRC have developed a series of courses that are offered throughout the U.S. including Electronic Data Interchange (EDI). A list of ECRC and courses are enclosed. APL offers courses in EC/EDI Basics as well as courses in Standards, Mapping, & Integration; EDI for Coordinators; Health Care EDI; Advanced Manufacturing EDI; Corporate Finance EDI; EDI Transportation & Distribution; and Financial EDI For Banks.

"Northern Arizona University is chaged by the Arizona Board of Board of Regents to deliver quality upper-division courses and undergraduate programs to all rural and, where specifically authorized, metropolitan counties, and to provide graduate education programs throughout the state." NAU could easily become a globalversity (see ED 372 185).

"Greater Orlando Resources and Links" and Central Florida Consortium of Higher Education hold great potential for becoming a Cyberglobal Learning Paradigm. ED 372 277 has information about institutions in Florida, including PHE.

EASY ACCESS TO THE FLC

THROUGH REGIONAL CONTACTS

To take advantage of the FLC network and to gain access to the federal R&D laboratories and centers, contact the FLC Regional Coordinator responsible for your area. The Regional Coordinator, working with the FLC Locator, will assist you in locating a specific laboratory to respond to your needs.

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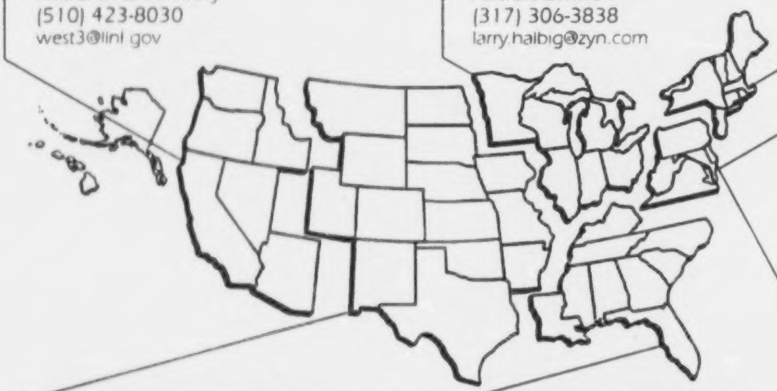

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HPCC FACTS

National Coordination Office for High Performance Computing and Communications

HIGH PERFORMANCE COMPUTING AND COMMUNICATIONS

The High Performance Computing and Communications Program is developing computing, communications, and software technologies for the 21st century. A multi-agency Federal Initiative, the HPCC Program fosters the rapid development of high performance computers and networks and the use of these resources throughout the Nation.

HPCC provides the foundation upon which an advanced National Information Infrastructure (NII) is being built. NII consists of high-speed communication links, high performance computers, and powerful, but user-friendly software that will give every American access to an unprecedented amount of information, as well as the tools needed to effectively process and use it. It will spur gains in U.S. productivity and industrial competitiveness, strengthen our national security, and improve the health and education of our citizens.

The HPCC Program was started in 1992 following the passage of the High Performance Computing Act of 1991 (Public Law 102-194). The Program evolved out of the recognition in the early 1980s that advanced computer and telecommunications technologies could provide huge benefits throughout the research community and the entire U.S. economy.

HPCC is the result of several years of effort by senior government, industry, and academic scientists and managers to initiate and implement a program to extend U.S. leadership in high performance computing and networking technologies and to apply those technologies to areas of profound impact on and interest to the American people.

Five integrated components make up the HPCC Program:

High Performance Computing Systems (HPCS)

Extend U.S. technological leadership in high performance computing through the developmentof scalable computing systems, with associated software, capable of sustaining at least one trillion operations per second (teraops) performance. Scalable parallel and distributed computing systems will be able to support workstation users through the largest-scale highest-performance systems. Workstations will extend into portable wireless interfaces as technology advances.

National Research and Education Network (NREN)

Extend U.S. technology leadership in computer communications by a program of research and development that advances the leading edge of networking technology and services. NREN will widen the research and education community's access to high performance computing and research centers and to electronic information resources and libraries. This will accelerate the development and deployment of networking technologies by the telecommunications industry. This includes nationwide prototypes for terrestrial, satellite, wireless and wireline communications systems.

Advanced Software Technology and Algorithms (ASTA)

Demonstrate prototype solutions to Grand Challenge problems through the development of advanced algorithms and software and the use of HPCC resources. Grand Challenge problems are computationally intensive problems such as forecasting weather, predicting climate, improving environmental quality, building more energy-efficient cars and airplanes, designing better drugs, and conducting basic scientific research.

Information Infrastructure Technology and Applications (IITA)

Support the NII by developing prototype solutions to National Challenges. These are major societal problems that computing and communications technology can help address in areas such as design and manufacturing, digital libraries, education, environmental monitoring, and health care. IITA will focus on services such as data and information management and on methods such as encipherment to ensure security, privacy, and protection of intellectual property rights; systems development and support tools; and intelligent user interfaces, including support for virtual reality, image understanding, and language and speech understanding.

Basic Research and Human Resources (BRHR)

Support research, training, and education in computer science, computer engineering and the computational sciences, and enhance the infrastructure through the addition of HPCC resources.

Participating Federal Agencies

The following 10 Federal departments and agencies conduct and sponsor high performance computing and communications:

- Department of Defense
    - Advanced Research Projects Agency
    - National Security Agency
- National Science Foundation
- Department of Energy
- National Aeronautics and Space Administration
- National Institutes of Health
- Department of Commerce
    - National Oceanic and Atmospheric Administration
    - National Institute of Standards and Technology
- Environmental Protection Agency
- Department of Education

NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE
FACT SHEET
A World of Knowledge for the Nation's Health
June 1995

NATIONAL LIBRARY OF MEDICINE TELEMEDICINE ACTIVITIES

Background

Telemedicine is the use of telecommunications technology for medical diagnosis and patient care, and is a medium for the provision of medical services to sites that are at a distance from the provider. The concept encompasses everything from the use of standard telephone service to high speed, wide bandwidth transmission of digitized signals in conjunction with computers, fiber optics, satellites, and other sophisticated peripheral equipment and software.

The National Library of Medicine (NLM) collects and indexes literature related to telemedicine through its MEDLINE® and HSTAR (Health Services/Technology Assessment Research) databases. HSRProj is a new database that provides information on grants and contracts awarded by major public and private funding agencies in the area of health services research, including telemedicine. The NLM collaborates with a number of institutions in the development of leading-edge technologies for telemedicine applications.

NLM HPCC Program

During FY 1994 NLM awarded twelve research contracts for "Biomedical Applications of High Performance Computing and Communications." Many of these have a telemedicine focus.

West Virginia University is working with a consortium of institutions to create a regional telemedicine system for rural areas of the state. The University of Iowa is using the Iowa Communications Network to establish a National Laboratory for the Study of Rural Telemedicine. The University of Pittsburgh is implementing a teleradiology system linking the university with outlying hospitals in the state. The Northwestern Memorial Hospital is creating linkages between the hospital and primary care locations in the Chicago metropolitan area. The University of California, San Francisco is conducting experiments involving the consultation, interpretation, and monitoring of satellite sites by neuro-imaging specialists at UCSF. Oregon Health Sciences University is testing the ability of high-speed computers and networks to improve the provision of dermatologic care. Indiana University is using digital networking technologies to link a teaching hospital with community clinics and pharmacies. Information about all twelve HPCC awards can be found at the following World Wide Web site: http:// www.hpcc.gov/, listed under Grants and Research Contracts/ Awards.

NLM Grants Program

Four existing NLM granting programs focus heavily on the networked flow of health information, and grants awarded often have telemedicine goals.

Information Access Grants provide $12,000 for single institutions and $12,000 per member for consortia to purchase basic computer and communications equipment to access NLM's Grateful Med®, DOCLINE®, and Loansome Doc™ services. Internet access is strongly encouraged. These grants are for one year except for consortia which qualify for an initial planning year to organize the membership and conduct a needs assessment. They are directed towards small and medium-size health institutions and especially towards consortia in remote rural areas where outlying institutions can network with a larger site equipped with back-up collections and library staff.

Information Systems Grants range up to $150,000 per year for one to three years and are targeted for larger health institutions such as teaching hospitals and academic health centers. Projects support computer and communications networking, integration and connectivity and must include the library as a participating partner. Internet capabilities are emphasized.

Internet Connections Grants provide support to health institutions involved in research, education, and patient-care to obtain an initial hook-up to the Internet. These grants are available in two forms: 1) $30,000 to single institutions and 2) $50,000 to those extending their existing connection to other sites, for example, teaching hospitals. Grant funds support costs for router/gateway equipment and associated connection hardware, installation and leasing of communication circuits to connect to an Internet provider, and membership fees to a provider.

IAIMS (Integrated Advanced Information Management Systems) Grants are institution-wide computer networks that link and relate library systems with a variety of individual and institutional databases and information files, within and external to the institution, for patient care, research, education, and administration. IAIMS grant support is available for: 1) an institution-wide planning phase with funding up to $150,000 per year for one to two years and 2) an operation phase for IAIMS plans to be implemented with up to $500,000 per year for one to five years or $550,000 per year if an IAIMS apprenticeship is included.

NLM's Extramural Program Division can be reached by Internet e-mail at epmail@occshost.nlm.nih.gov, by telephone at (301) 496-4221, or by FAX at (301) 402-0421.

Institute of Medicine Telemedicine Study

In FY 1995, NLM, together with the Health Care Financing Administration and the Department of Veterans Affairs, is sponsoring a study by the Institute of Medicine of the National Academy of Sciences. The study will examine the appropriate criteria for evaluation of the impact of telemedicine on access, quality, and cost of care. In FY 1997, these criteria should be applied to evaluations of telemedicine projects supported by NLM and other Federal agencies.

NLM Internal R & D related to Telemedicine

Issues important in telemedicine are being addressed in several projects at the National Library of Medicine. The Visible Human Project, a 3-D computerized cadaver and a detailed atlas of the human body, was assembled digitally from thousands of x-ray, magnetic and photo images of cross-sections of the body. Among the goals of the Visible Human Project is the establishment of standards needed for linkages between image data and such text-based data as names, hierarchies, principles and theories, so that a print library and an image library could serve as a single unified resource for medical information. To develop a system of knowledge structures that can transparently link visual knowledge forms to symbolic knowledge formats is the long-term goal. Image data comprising some 1,800 micro-thin slices have been acquired from a male cadaver and data from a female cadaver will be available soon. Image data include transverse CT, MRI and high resolution cryosection color images. NLM makes the data available to interested researchers and developers.

In the course of creating an electronic image archive of digitized x-rays and providing access to it over the Internet, the DXPNET project addresses such issues as image compression, high density storage, high speed transmission, and user-machine interface design. The project is a collaborative effort among the NLM, the National Center for Health Statistics (NCHS), and the National Institute of Arthritis, Musculoskeletal and Skin Diseases (NIAMS). The NLM, through the Lister Hill National Center for Biomedical Communications, serves in the role of developer and technical manager for the project.

The DocView™ project investigates end user access to the medical literature in the form of scanned pages of journals and other sources sent over the Internet from Ariel workstations (increasingly used by libraries) and document image databases. DocView is client software running under Microsoft Windows that has a communications module capable of TCP/IP linkage (for receiving Ariel transmissions), and also the capability of being used as a viewer for documents received by an Internet client such as NCSA Mosaic. In either case, the end user may display, manipulate, cut and paste, electronically bookmark the received pages, and print only the pages desired.

Telemedicine Current Bibliography in Medicine

A bibliography on telemedicine research has recently been prepared and is available via anonymous ftp: nlmpubs.nlm.nih.gov/bibs/cbm/telembib.txt, and as the file "Telemedicine: Past, Present, Future" on the NLM gopher server (gopher.nlm.nih.gov/), under Resource Lists and Bibliographies, Current Bibliographies in Medicine. Printed copies will be available later this spring in the Current Bibliographies in Medicine series.

For further information about the programs described here contact:

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National Library of Medicine
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Bethesda, MD 20894
Fax: (301) 496-4450
publicinfo@nlm.nih.gov

NATIONAL INSTITUTES OF HEALTH

NATIONAL LIBRARY OF MEDICINE

FACT SHEET

A World of Knowledge for the Nation's Health

February 1995

THE NATIONAL LIBRARY OF MEDICINE

The National Library of Medicine (NLM) is the world's largest research library in a single scientific and professional field. The Library collects materials exhaustively in all major areas of the health sciences and to a lesser degree in such areas as chemistry, physics, botany and zoology. The collections today stand at 5 million items—books, journals, technical reports, manuscripts, microfilms, and pictorial materials. Housed within the Library is one of the world's finest medical history collections of old (pre-1914) and rare medical texts, manuscripts, and incunabula.

The Library's extensive collections and information services may be used by health professionals and health-science students. Books and journals may be consulted in the reading room; they may also be requested on interlibrary loan. Medical audiovisual materials may be viewed in the Library's Learning Resource Center and may be borrowed on interlibrary loan. There is a fee for all interlibrary loan transactions.

NLM serves as a national resource for all U.S. health science libraries. Lending and other services are provided through a National Network of Libraries of Medicine (NN/LM™) consisting of 4,000 "primary access" libraries (mostly at hospitals), 125 Resource Libraries (at medical schools), 8 Regional Libraries (covering all geographic regions of the U.S.), and the NLM itself as a national resource for the entire Network. More than 2.5 million interlibrary loan requests are filled each year within this Network.

The Library occupies two buildings on the National Institutes of Health campus: the National Library of Medicine building (1962) contains the collection, reading rooms, and public services; the adjacent 10-story Lister Hill Center Building (1980) contains NLM's computer facility, an auditorium, research and development laboratories, the Toxicology Information Program, and the Extramural Program (grants). The two buildings total some 432,000 square feet.

MEDLARS®

The Library's computer-based Medical Literature Analysis and Retrieval System (MEDLARS) was established to achieve rapid bibliographic access to NLM's vast store of biomedical information. Historically, it was a pioneering effort to use the emerging computer technology of the early 1960s for the production of bibliographic publications and for conducting individualized searches of the literature for health professionals. MEDLARS continues to be used for preparing and photocomposing bibliographic publications. *Index Medicus*®—the monthly subject/author guide to articles in 3,000 journals—is the most well known of these but dozens of other specialized medical bibliographies are produced as well. (A complete list of NLM publications is available.) Today, through communications networks, MEDLARS search services are available online to individuals and institutions throughout the world.

Over the years of its evolution, MEDLARS has come to represent a family of databases of which the MEDLINE® database is the most well known. Essentially *Index Medicus* online, MEDLINE enables individuals and organizations with computer terminals to query the NLM computer's store of journal article references on specific topics. MEDLINE currently contains seven million references going back to 1966.

Besides MEDLINE, which became operational in 1971, NLM now has some 40 other databases—for cataloging and serials information, toxicological and chemical data, information on audiovisual materials, and information on cancer and other specialized areas of health and disease.

All of the MEDLARS databases are available through NLM's online network of more than 100,000 institutions and individuals in the United States. They performed some 7 million searches in 1994. User fees are charged by NLM to recover the full costs of providing access to the system. The availability of the user-friendly microcomputer-based access software, GRATEFUL MED®, has resulted in an upsurge of individual health professionals joining the NLM network. Access to the MEDLINE database is also available through four commercial networks and on CD-ROM from several private companies.

Research and Development

The Library's research and development is carried out by the Lister Hill National Center for Biomedical Communications and the National Center for Biotechnology Information (NCBI). The former, named after the late Senator from Alabama, explores the uses of computer, communication, and audiovisual technologies to improve the organization, dissemination, and utilization of biomedical information. The Center was established in 1968 and reorganized in 1983 to include the functions of NLM's National Medical Audiovisual Center.

The Lister Hill Center (LHC) played a lead role in developing the MEDLARS online retrieval system in the late sixties and since then has conducted a number of valuable communications experiments using NASA satellites, microwave and cable television, and computer-assisted instruction. Currently the Center is investigating the potential of optical videodisc technology for document preservation, storage, and retrieval. Computer-based "Expert" systems that will make available to practitioners the knowledge of highly trained specialists have been devised in several medical fields. Another program seeks to create, in complete anatomical detail, three-dimensional representations of the male and female human body. This will result in a very large digital image library of volumetric data. "The Learning Center," a facility that makes available for on-site review the latest hardware and software in health sciences education, has been opened within the Lister Hill Center.

The Library's newest component, the National Center for Biotechnology Information, has assumed a leadership role in developing information services for biotechnology—the task of storing and making accessible the staggering amounts of data about the human genome resulting from genetic research at the NIH and laboratories around the nation.

Established by Congress in 1988, NCBI is a recognized leader in basic research in computational molecular biology. The Center is also responsible for developing innovative computer solutions for the management and dissemination of the rapidly growing volume of genome information. In October, 1992, the NCBI began distributing GenBank®, a collection of all known DNA sequences.

Toxicology Information Program

The Toxicology Information Program (TIP) was established at NLM in 1967 to provide national access to information on toxicology. The program is charged with setting up computerized databases of information from the literature of toxicology and from the files of both governmental and nongovernmental collaborating organizations.

Among the databases developed by TIP are TOXLINE® (Toxicology Information Online) and CHEMLINE®, and CHEMID®. The latter two are chemical directory files. TIP also implemented the TOXNET® (Toxicology Data Network) system of 12 toxicologically oriented data banks, including the HSDB® (Hazardous Substances Data Bank), useful in chemical emergency response and other applications. TIP also supports the Toxicology Information Response Center®, which provides reference services to the scientific community.

Grant Programs

The Extramural Programs Division of NLM provides a broad variety of grants to support research and development activities leading to the better management, dissemination, and use of biomedical knowledge. These support activities represent the only Federal assistance programs focusing on information issues that concern the entire health community. Grants are available to support research in medical informatics, health information science, and biotechnology information, as well as for research training in these areas. Network planning and development grants support computer and communication systems in medical centers and health institutions, and the study of new opportunities with high-speed computer networks in the health sciences. Health science library resource grants assist in improving information access and services for health professionals. Research and publications in the history of medicine and the life sciences are also supported with grants, as are a variety of scientific publication and communication activities needed by the health science community.

Statistical Profile of NLM
(September 30, 1994)

Collection (book and nonbook) - 5,016,000
Appropriation (FY 1994) - $118,019,000
Staff (full-time equivalents) - 614
Serial titles received - 23,250
Articles indexed (all databases) - 368,000
Journals indexed (for *Index Medicus*) - 3,127
Titles cataloged - 21,006
Budget for buying publications - $4,456,000
Circulation requests filled - 410,000
  For interlibrary loan - 230,000
  For readers - 180,000
Computerized searches (all databases) - 6,900,000
Grant awards (new and renewal) - 129
Amount obligated for grants - $28,420,000

Information for Visitors

- Address: The National Library of Medicine
  8600 Rockville Pike
  Bethesda, MD 20894

Note: NLM is conveniently served by the Metrorail rapid transit system. The Library is 300 yards south of the Medical Center stop on the "Red Line."

- Telephone: 1-800-272-4787 (health professional inquiries)
  (301) 496-6308 (public information)

- **Reading Room hours**
  Mon., Tues., Wed., & Friday: 8:30 a.m.-5:00 p.m.
  Thursday: 8:30 a.m.-9:00 p.m.
  (Reference Assistance is available until 7:00 p.m.)
  Saturday: 8:30 a.m.-12.30 p.m.

  Summer hours
  Monday through Friday: 8:30 a.m.-5:00 p.m.
  Saturday: 8:30 a.m.-12.30 p.m.

  History of Medicine
  Monday through Friday: 8:30 a.m.-5:00 p.m.

- Tours: Monday through Friday: 1 p.m.
  Visitors Center (Lobby of Building 38A—The Lister Hill Center). Call (301) 496-6308 or write to the Public Information Office to make arrangements for groups.

Further Information

For more information about any of the programs described in this Fact Sheet, write to the Public Information Office, National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894,
(e-mail publicinfo@occshost.nlm.nih.gov).

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• Boulder

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NIST Update

Jan. 22, 1996

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☐ QUALITY

Health Care, Education Pilots Off for 1996

NIST's pilot quality award programs in health care and education will be discontinued in 1996 since federal funding to support them is not included in the proposed Congressional FY 1996 appropriation for the agency. The pilot programs were launched by NIST in 1995 to explore a variety of issues related to possible expansion of the Malcolm Baldrige National Quality Award to include categories for these two sectors. Health care and education organizations have been very interested in applying the benefits of the Baldrige evaluation process to their own needs. In 1995, 46 health care and 19 education organizations submitted applications as part of the pilots, and NIST distributed over 20,000 copies of the criteria for the pilot programs. While NIST will not accept applications for the pilots in 1996, volunteer experts from the health care and education communities will serve on the board of private-sector examiners that evaluate the business applications. **In addition, NIST will continue to work with the health care and education communities to establish a base of long-term, private-sector funding similar to the more than $10 million raised by a private foundation for the business award.** A full-scale award program in 1997 for health care and education will depend largely on continuing support from these two sectors and the prospects for long-term funding.

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Malcolm Baldrige
National
Quality
Award

Administered by:
The American Society for Quality Control
P.O. Box 3005
Milwaukee, Wisconsin 53201-3005

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PITTSBURGH
SUPERCOMPUTING
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Coursework Grants

A primary mission of the Pittsburgh Supercomputing Center is to train students, including undergraduates, on the proper use of supercomputers. One training method is coursework supercomputing grants, grants of FREE supercomputing time which supplement other teaching tools. Typically, coursework grants have been used for homework, problems in heavily quantitative courses, such as numerical methods, computational fluid dynamics, and computational chemistry, but we encourage faculty members from all fields of science, including the social sciences and humanities, to take advantage of these grants.

What a Grant Provides

A coursework grant provides the following:

- five service units on the CRAY Y-MP C90, renewable yearly, for use by the instructors and students in the course
- assistance in incorporating the vectorization and multitasking capabilities of a supercomputer into the course
- hard-copy and extensive on-line documentation
- access to all of the center's facilities, including scientific visualization hardware and software and an extensive set of computational software and biomedical databases
- all the other services provided to users of the center, such as assistance with network communications problems and access to our staff of user consultants and scientific specialists.

How to Obtain a Grant

To obtain a coursework grant, please send the following:

- a brief letter on your institution's letterhead requesting a grant
- a curriculum vitae of the primary instructor
- a course syllabus.

Send your request to:

Allocation Coordinator
Pittsburgh Supercomputing Center
4400 Fifth Avenue
Mellon Institute Building
Pittsburgh, PA 15213

Examples of Grants

Coursework grants have been used at PSC in the following courses:

- Computational Fluid Dynamics II
- Advanced Empirical Research in Finance
- Computational Engineering Software
- Applications of Parallel Computers
- Numerical Analysis
- Scientific Problem-Solving with Supercomputers
- Computational Methods in Engineering Research
- Supercomputing Hardware and Software Issues

Mellon Institute Building
4400 Fifth Avenue
Pittsburgh, PA 15213

ADVANCED TECHNOLOGY PROGRAM

Objective:

Promote U.S. economic growth through development and application of technology

ATP CHARACTERISTICS

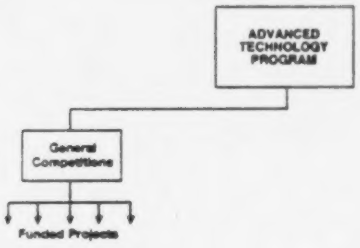
- High-risk technology development
- For-profit companies of all size
- Cost-sharing by industry
- Collaborations / Strategic Alliances Encouraged
- Fair, Open and Rigorous Competition
- Technical and Business Merit
- No ATP funding for commercialization
- Emphasis on commercialization
- Cooperative Research Agreements

ADVANCED TECHNOLOGY PROGRAM: Status

- 4 Competitions Completed
- 1,000 Projects Totalling $3 Billion of R&D Proposed
- 89 Projects Totalling $500 Million of R&D Funded
- Planned Scale-up of Program from $10 Million to $750 Million

BENEFITS FROM ATP PARTICIPATION

- **Expanded R&D Funding**
- **Collaboration on Shared Problems**
- **Ultimate Benefit to U.S. Economy**
- **Opportunities for Strategic Business Alliances**
- **Improved Ability to Attract Investors**
- **Cost and Time Savings from Collaboration**
- **Improved Competitive Standing**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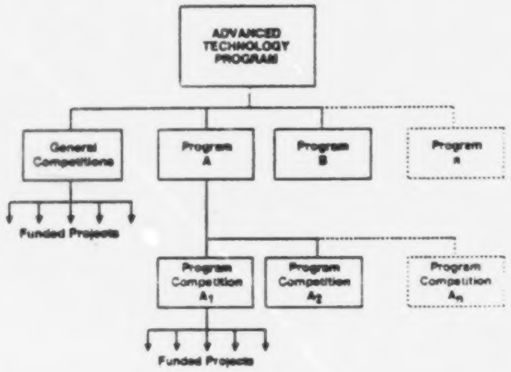
General Competitions
Funded Projects


ADVANCED TECHNOLOGY PROGRAM
General Competitions
Program A
Program B
Program n
Funded Projects
Program Competition A1
Program Competition A2
Program Competition An
Funded Projects

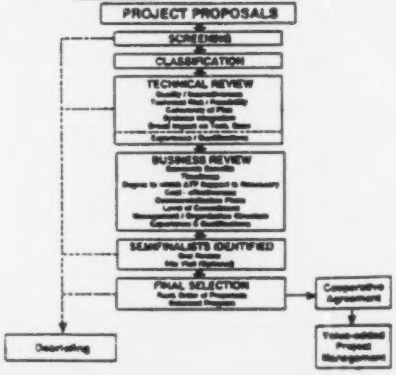
ATP PROJECT TYPES

- **Individual companies**
  - **No more than 3 years**
  - **Up to $2 million total**
  - **NIST pays only direct costs**

- **Joint ventures**
  - **No more than 5 years**
  - **No limit on award amount**
  - **NIST share less than 50%**

No direct funding to universities, government agencies or non-profit independent research institutes

ATP PROJECT SELECTION PROCESS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Cooperative Agreement
Value-added Project Management
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INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE

THE REPORT OF THE WORKING GROUP ON INTELLECTUAL PROPERTY RIGHTS

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Commissioner of Patents and Trademarks
CHAIR

INFORMATION INFRASTRUCTURE TASK FORCE

RONALD H. BROWN
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SEPTEMBER 1995

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APPENDICES

CIE Programs
Overseas and Domestic

To receive further information, indicate the programs that interest you, fill out the form below, and return it to the following address:

Center for International Education
U.S. Department of Education
600 Independence Avenue, S.W.
Washington, D.C. 20202-5247

Fulbright-Hays Act
___ Doctoral Dissertation Research Abroad
___ Faculty Research Abroad
___ Group Projects Abroad
___ Seminars Abroad

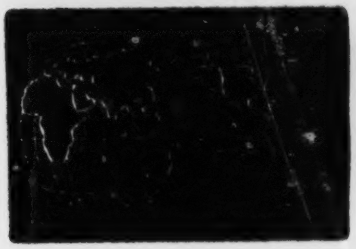
Title VI of the Higher Education Act
___ American Overseas Research Centers
___ Business and International Education
___ Centers for International Business Education
___ Foreign Language and Area Studies Fellowships
___ Institute for International Public Policy
___ International Research and Studies
___ Language Resource Centers
___ National Resource Centers
___ Undergraduate International Studies & Foreign Language

Name: ______________________
Address: ______________________
____
____

Our mission is to ensure equal access to education and to promote educational excellence throughout the Nation.

Center for International Education
U.S. Department of Education
600 Independence Avenue S.W.
Washington D.C. 20202-5247
tel: 202/401-9798
fax: 202/205-9489

U.S. Department of Education



CENTER FOR INTERNATIONAL EDUCATION

Fulbright-Hays Act

Under the Fulbright-Hays Act, the Center for International Education provides a variety of grants to individuals and institutions of higher education for projects in modern foreign languages and area studies.

Doctoral Dissertation Research Abroad:
This program provides grants to colleges and universities to fund individual doctoral students to conduct research in other countries in modern foreign languages and area studies.
Contact: Karla Ver Bryck Block, 202/401-9774

Faculty Research Abroad:
Using grants provided through institutions of higher education, this program provides opportunities for scholars to maintain and improve their area studies and language skills by conducting research abroad.
Contact: Eliza Washington, 202/401-9777

Group Projects Abroad:
This program provides grants to colleges and universities, State departments of education, and private non-profit educational organizations to fund overseas projects in modern foreign languages and area studies.
Contact: Lungching Chiao, 202/401-9772

Seminars Abroad/Special Bilateral Programs:
This program provides 4 to 8 week summer seminars abroad for elementary (grades 4 to 6) and secondary school teachers, postsecondary faculty and curriculum specialists in the social sciences and humanities.
Contact: Linda Byrd-Johnson, 202/401-9775
Rosalie Gendimenico, 202/401-9776

Title VI Higher Education Act

Under Title VI of the Higher Education Act, CIE supports nine programs within the United States, both for individuals and for institutions of higher education.

American Overseas Research Centers:
This program offers grants to consortia of U.S. institutions of higher education to establish or operate overseas centers to promote postgraduate research, exchanges, and area studies.
Contact: Uri Monson, 202/401-9779

Business and International Education:
This program provides matching grants to colleges and universities to internationalize the business curriculum and to promote links between academic institutions and the American business community.
Contact: Sarah Beaton, 202/401-9778

Centers for International Business Education:
This program provides funding to U.S. schools of business for curriculum development, research and training on issues of importance to U.S. trade and competitiveness.
Contact: Susanna Easton, 202/401-9780

Foreign Language and Area Studies Fellowships:
This program provides academic year and summer awards to colleges and universities to assist graduate students in foreign language and either international studies or area studies.
Contact:
Cheryl Gibbs (East Asia, Pacific Islands), 202/401-9785
Uri Monson (Middle East, South Asia, Southeast Asia), 202/401-9779
Karla Ver Bryck Block (Africa, International), 202/401-9774
Sara West (Canada, Latin America, Europe, Inner Asia), 202/401-9782

Institute for International Public Policy:
This program provides a single grant to assist a consortium of colleges and universities to establish an institute designed to increase the representation of minorities in international service.
Contact: Linda Byrd-Johnson, 202/401-9775

International Research and Studies:
This program supports surveys, studies and instructional materials development for foreign language, area, and related international studies.
Contact: José L. Martinez, 202/401-9784

Language Resource Centers:
This program awards grants to centers at institutions of higher education to help improve the nation's capacity to teach and learn foreign languages through training, research, materials development and dissemination projects.
Contact: Sara West, 202/401-9782

National Resource Centers:
This program provides grants to colleges and universities to strengthen and maintain U.S. capacity in foreign languages, area and international studies expertise.
Contact:
Cheryl Gibbs (East Asia, Pacific Islands), 202/401-9785
Uri Monson (Middle East, South Asia, Southeast Asia), 202/401-9779
Karla Ver Bryck Block (Africa, International), 202/401-9774
Sara West (Canada, Latin America, Europe, Inner Asia), 202/401-9782

Undergraduate International Studies and Foreign Language:
This program awards grants to institutions of higher education as well as public and private non-profit agencies to plan, develop and carry out programs to strengthen undergraduate instruction in international studies and foreign languages.
Contact: Christine Corey, 202/401-9783

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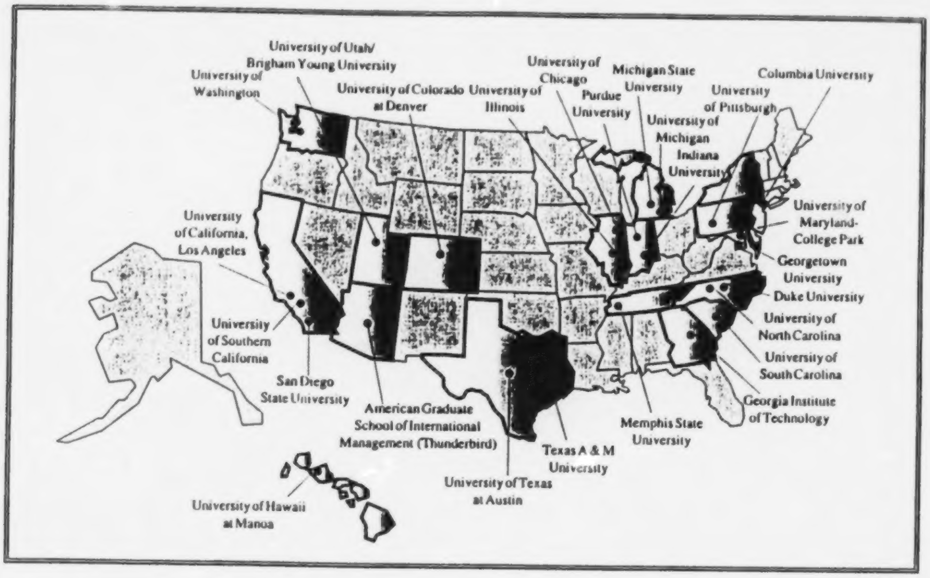
CIBER Locations Across the Nation


University of Utah/
Brigham Young University
University of Washington
University of Colorado at Denver
University of Illinois
University of Chicago
Michigan State University
Purdue University
University of Michigan
Indiana University
University of Pittsburgh
Columbia University
University of Maryland-College Park
Georgetown University
Duke University
University of North Carolina
University of South Carolina
Georgia Institute of Technology
Memphis State University
Texas A & M University
University of Texas at Austin
American Graduate School of International Management (Thunderbird)
San Diego State University
University of Southern California
University of California, Los Angeles
University of Hawaii at Manoa

MULTI-YEAR PLAN

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5

➢FACULTY DEVELOPMENT IN INTERNATIONAL BUSINESS⮜

(FDIB)

PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
DOMESTIC						
French and the Francophone World Economy, Politics and Culture	Oct., 1995	San Diego State University (SDSU)	California Secondary & Community College Faculty	$50	SDSU CIBER French Consulate General	David Earwicker SDSU, CIBER Deadline: 8/15/95
Radical Changes in Japan: The Impact on Business Opportunities for College Graduates	Oct. 26, 1994	Georgia Tech	Faculty/Students	Free	Georgia Tech CIBER Chamber of Commerce in Japan--Omron--Nihon Keizai Shimbun	Georgia Tech CIBER
Internationalizing Business Education	Oct. 28, 1994	San Antonia, TX	Business faculty at Regional Colleges	$50	Texas and Texas A & M CIBERs	Karen Burke CIBS, Texas A&M
Utah Association of International Business Educators' Symposium	Nov. 18, 1994	Brigham Young Univ. Provo, Utah	International business faculty at public & private junior colleges & universities in Utah	No Cost	CIBERs at: University of Utah and Brigham Young University	Lee Radebaugh, Director, CIBER Brigham Young Univ.
Teaching of Business German and International Business German Exam	Dec. 2, 1994	Purdue University	High School and College teachers of Business German	No Cost	Dept. of Foreign Language and Literature	Christiane Keck Head, Foreign Languages and Literatures Purdue University 317-494-3834
Manual on Internationalizing Teaching of POM (FDIB)	Jan., 1995		College teachers, production, and operations management	No Charge	POM Society, and Maryland CIBER	Kasra Ferdows School of Business Georgetown University

PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
DOMESTIC						
Integrating the Business and Area Studies Curricula	Feb., 1995	California State University, Fullerton	CSU Faculty & Administrators	No cost	SDSU CIBER CIBER CSU Int'l Business Consortium	A. G. Branan Co-Director, CIBER SDSU
International Business Research Symposium	Feb. 10, 1995	Univ. of Utah Salt Lake City, Utah	Faculty from the intermountain region interested in int'l. business research	No Cost	CIBERs at: University of Utah and Brigham Young University (& others as interested)	C. Brooklyn Derr Director, CIBER University of Utah
The Impact of Globalization: New Directions in Teaching Foreign Language and Culture	Feb. 23-25, 1995	Memphis, TN	Foreign Languages and Area Specialists	$250	CIBERs at: Georgia Tech, San Diego State, University of Memphis	Georgia Tech CIBER SDSU CIBER Memphis CIBER
Northwest Int'l. Business Educators' Network (NIBEN) Workshop	Feb. 24-25, 1995	Univ. of Washington Campus	Int'l. business education in the Pacific Northwest and Southwest of Canada	No Cost	University of Washington CIBER	Prof. Richard Moxon Director, CIBER Deadline: 1/30/95
Strategies for Internationalizing Management Programs	March, 1995	Baltimore	Business faculty & administrators from Mid-Atlantic & regional schools	TBA	CIBER Maryland	Doreen Bass University of Maryland CIBER 301-405-2136
Internationalizing Business Schools	March 5-7, 1995	Denver, CO			Indiana University, AACSB, Univ. of Michigan, Texas, Colorado, & Denver	Patricia Eoyang and Roger Schmenner, Indiana University CIBER

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PROGRAM	*WHEN*	*WHERE*	*TARGET AUDIENCE*	*COST TO PARTICIPANTS **	*SPONSORS*	*CONTACT PERSON & APPLICATION INFORMATION*
DOMESTIC						
Faculty Development Workshop on Washington, D.C. policy process (FDIB)	**March, 1995**	**School of Business Georgetown University Washington, D.C.**	**College teachers in business and political science**	**$75 (tentative)**		**George Liebensfeld Georgetown University**
Workshop for Teachers of Business French	**Spring 1995**	**Univ. of Pittsburgh**	**Secondary Teachers College & University Professors**	**$85 (approx.)**	**IBC French Consulate General, San Francisco (Linguistic Attache')**	**Catherine Brennan Assistant Director CIBER University of Pittsburgh**
International Faculty Seminar Series	**Spring, Fall 1995 (6 seminars)**	**Univ. of Pittsburgh**	**Business Economists & other interested faculty**	**No cost**	**IBC**	**Catherine Brennan Assistant Director CIBER University of Pittsburgh**
Faculty Development Workshops on Int'l. Environment and Strategy	**Spring, Fall 1995 (A)**	**Fuqua School of Business**	**Undergraduate & Graduate faculty in business programs**	**$100-200**	**Duke CIBER**	**Margaret Coin CIBER Coordinator Duke University**
Cross-Culture Faculty Traniing	**Spring 1995 (2 days)**	**Salt Lake City. Utah**	**Business School Faculty who include National Culture Analysis in their teaching**	**$300 + expenses**	**CIBERs at: Univ. of Utah and Brigham Young University**	**C. Brooklyn Derr Director, CIBER Univ. of Utah**
Global Software Conference: Key issues & Trends	**Spring 1995 Utah**	**Univ. of Utah , Salt Lake City,**	**Faculty, Business Community**	**$250 + expenses**	**CIBERs at: University of Utah and Brigham Young University**	**C. Brooklyn Derr Director, CIBER Univ. of Utah**

PROGRAM	*WHEN*	*WHERE*	*TARGET AUDIENCE*	*COST TO PARTICIPANTS **	*SPONSORS*	*CONTACT PERSON & APPLICATION INFORMATION*
DOMESTIC						
Language for Commercial Purposes	**April, 1995**	**University of Texas**	**Regional faculty & Ph.D.students teaching Languages & Business School Administrators**	**TBA**	**University of Texas**	**Linda Gerber CIBER Univ. of Texas**
Strategies for Internationalizing Management Programs	**April 21, 1995**	**Baltimore**	**Business faculty and administrators from Mid-Atlantic schools**	**No Cost**	**CIBER Maryland**	**Doreen Bass CIBER Maryland**
International Marketing Doctoral Consortium	**May, 1995 (tentative)**	**University of Texas**			**University of Texas UCLA University of Washington University of Michigan**	**Robert Green Director, CIBER University of Texas**
International Human Resource Management	**May 1995**	**Denver, CO**	**University and college HR/OB/IHR faculty**	**$1,500**	**CIBER at CU-Denver**	**Cheryl Ryan CU-Denver CIBER or Dr. Cascio at CU-Denver College of Business**
Internationalizing the Accounting Curriculum	**May 22-24, 1995**	**UMCP**	**Accounting faculty & doctoral students**	**TBA**	**CIBER Maryland**	**Doreen Bass University of Maryland CIBER 301-405-2136**
Getting Started: The Business Language Classroom	**June 3-4, 1995 (A)**	**University of Maryland-College Park (UMCP) Mid-Atlantic schools**	**Business language faculty & doctoral students from**	**$25 * * (2,500 grant received from Univ. of Maryland System for this program)**	**Univ. of Maryland System and CIBER Maryland**	**Doreen Bass University of Maryland CIBER 301-405-2136**

PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
DOMESTIC						
Business Spanish Workshop	June, 1995 (10 days)	SDSU	Spanish Language faculty	TBA	CIBERs at: SDSU and Thunderbird	A. G. Branan SDSU CIBER David Ricks Thunderbird
Global Investment Forum: International Finance Education Conference	June 2, 1995	Georgia Tech	Faculty	$95	Georgia Tech CIBER - William's Chair in Finance	Georgia Tech CIBER
Seminars for Faculty Development on Int'l. Business (Finance, Marketing, Business, and Management)	June 9-12 1995 (A)	University of Memphis	Business and Foreign Language Faculty	$1295	CIBERs at: University of Memphis Duke University Georgia Tech	Erwin Williamson Assistant Director University of Memphis
Faculty Development in International Business	June 12-16 1995	Denver, CO	University and college business faculty	$1,500 (scholarships avail.)	CIBERs at: CU-Denver Thunderbird	Cheryl Ryan CIBER CU-Denver
Pedagogy Workshop	June 13-17, 1995	Indiana University	University & College faculty	$150	Indiana University	Patricia Eoyang, Associate Director Indiana Universit CIBER
Annual Faculty Development Seminars	Mid-June 1995	Memphis, TN	Faculty	$900	CIBERs at: Georgia Tech, Duke, and University of Memphis	Georgia Tech CIBER Duke CIBER Univ.of Memphis CIBER

PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
DOMESTIC						
International Business Intitute for Community Faculty	June 18-23, 1995	Kellogg Center Michigan State Univ.	Business Faculty at Community Colleges	TBA	Milwaukee Area Technical College; CIBERs at Michigan State, Purdue University, University of Illinois-Urbana	Doris Scarlett Associate Director CIBER Michigan State Univ.
FDIB Course Offerings: -Int'l. Mgmt. -Int'l. Financial Mgmt. -Int'l. Logistics, Sourcing, Production -Int'l. Business: An Introduction -Int'l. Accounting -Int'l. Business Theory & Research -Int'l. Marketing	June 18-29 July 23-Aug. 3 1995 (A)	University of South Carolina Columbia, SC	Faculty interested in internationalizing their curriula & teaching international business courses	$1950 - one seminar $2950 - two seminars	University of South Carolina College of Business Administration Deadline:	Dr. C. M. Korth Director of FDIB Univ. of South Carolina 3/31/95 (June seminar) 4/28/95 (July seminar)
Workshop in Int'l. Business for Foreign Language & Area Studies Specialists	July, 1995	Urbana, IL	Foreign language/ area studies faculty	TBA	University of Illinois at Urbana-Champaign (UIUC)	Lori Williamson Associate Director University of Illinois CIBER 217-333-8335
Workshop on Privatization in Russia & Eastern Europe	July, 1995	Urbana, IL	Russian & East European specialists	TBA	UIUC CIBER and Russian & East European Center	Lori Williamson Associate Director University of Illinois CIBER or Call the Russian & East European Center 217-333-1244

PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
DOMESTIC						
Workshop on Teaching Spanish for International Business for Professors of Spanish	July 23-Aug. 3, 1995 (A)	University of South Carolina Columbia, SC	Professors of Spanish interested in offering courses in business or commercial Spanish	$950 (grants available)	University of South Carolina College of Business Administration	Dr. T. Bruce Fryer Univ. of South Carolina 803-777-2973 Deadline: 5/95
Workshops for Deans on Integrating Int'l. Business into Curriculum	Summer, 1995 (A)	Fuqua School of Business	Undergraduate & Graduate deans in business programs	$200 (approx.)	Duke CIBER	Margaret Coin CIBER Coordinator Duke University
Workshop on Business for Foreign Language Faculty	Summer, 1995	Fuqua School of Business	Undergraduate & Graduate foreign language faculty	$100-$200	Duke CIBER	Margaret Coin, CIBER Coordinator Duke University
Teaching Business Context Courses in Japanese, Korean, Mandarin Languages	Summer 1995	Snowbird or Park City, Utah	International Business Language Instructors	TBA	CIBERs at: University of Utah and Brigham Young University	Lee Radebaugh, Director, CIBER Brigham Young Univ.
Summer Workshop for K-12 Teachers	Summer 1995 (A)	Purdue University	Kindergarten through 12th Grade Teachers	No Cost	Purdue University CIBER	Marie Thursby, Director, CIBER Purdue University
Internationalizing the Accounting Curriculum	Summer 1995	University of Maryland	Accounting faculty Doctoral students	No Cost	CIBER Maryland	Doreen Bass CIBER Maryland
Internationalizing the Community College Business Curriculum	Fall, 1995	Northern & Southern California	Community College Faculty & Administrators	No cost	SDSU CIBER Centers for International Trade & Development	A. G. Branan Co-Director, CIBER San Diego State Univ.

PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
DOMESTIC						
Global Issues Forum	Each Semester	San Diego	Liberal Arts/Business Faculty (Business Community)	No Cost	SDSU CIBER	Michael Hergert Co-Director SDSU, CIBER
The Californias in Transition	Each Semester	SDSU	Liberal Arts/Business Faculty (business community)	No Cost	SDSU CIBER	A. G. Branan, Co-Director SDSU - CIBER
FDIB	1995 (A)	Thunderbird	Business faculty	$1500	Thunderbird CIBER	David Ricks Director, CIBER Thunderbird
FDIB	5-days 1995 (A)	Univ. of Colorado at Denver	Business faculty, Community college faculty, & K-12 teachers	$1500	CIBERS at: Thunderbird & Univ. of Colorado	M. Serapio Univ. of Colorado at Denver

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(A) Annually/Repeated each year

* In cases where grant funds are available, the participants and/or institution would still be expected to pay some costs.

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PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
ABROAD						
European FDIB	May 15-27, 1995 (tentative)	European Community Sites: Brussels and Prague	Faculty from Business Foreign Language, Geographical Area Studies	TBA	CIBERs at : Michigan State University University of Pittsburgh	Doris Scarlett Associate Director Michigan State Univ.
Faculty Study Abroad	May 14-26, 1995 (tentative) (A)	Antwerp, Belgium	Business, Foreign Language, and Area Studies Faculty	$1950 (tentative)	CIBERs at Univ. of Memphis and Texas A & M	Erwin Williamson Assistant Director University of Memphis
FDIB Mexico Program	May 17-26 1995 (A)	Mexico	Business School Faculty & Deans	$1500 (US)	CIBERs at: Texas A & M	Dr. B. Flores Texas A & M
					University of Memphis	Dr.Ben Kedia, Director CIBER, Univ. of Memphis
					San Diego State University	Dr. M. Hergert San Diego State Univ.
					University of Maryland	Doreen Bass CIBER Maryland
FDIB East Asia Program	June 1-17, 1995	Japan, China, Hong Kong, Singapore	Business School Faculty & Deans	$3500 (US)	CIBERs at: Texas A & M and	Dr. J. Gaspar, Director Texas A & M
					University of Hawaii	Dr. S. Daniel, Director University of Hawaii
CIBER Seminar for U.S. Professors of Business French	July 3-21, 1995	Montpellier, France	University Professors of French interested in developing courses in Business French	No Cost	SDSU CIBER Ambassade de France	SDSU CIBER Deadline: 3/15/95

PROGRAM	WHEN	WHERE	TARGET AUDIENCE	COST TO PARTICIPANTS *	SPONSORS	CONTACT PERSON & APPLICATION INFORMATION
ABROAD						
Asia-sited FDIB	June/July 95	Singapore, Hong Kong, Shanghai, China, Tokyo, Japan	Business faculty	$4,000	CIBERs at: Univ. of Hawaii and Texas A & M	Julian Gaspar, Director Texas A & M Deadline: 3/95
Business Studies in Belarus, Ukraine, Russia and Kazakhstan	Summer, 1995	Belarus, Ukraine, Russia, and	Business & Economic Faculty Kazakhstan	(Grants up to $2,400)	Center for Russian & East European Studies at Univ. of Pittsburgh	Robert Donnorummo (REES) University of Pittsburgh 412-648-7407
Faculty Dev. for Ph.D. Candidates	Dec. 94 to Jan. 95	Asia	Ph.D. Candidates & Assistant Professors	$4,500	University of Hawaii CIBER	Shirley Daniel, Director University of Hawaii Deadline: 10/94

This directory contains current information on Faculty Development Programs as of December, 1994. Updated information is available on the internet through CIBERWeb for both FDIB and conferences.

(A) Annually/Repeated each year

* In cases where grant funds are available, the participants and/or institution would still be expected to pay some costs.

Compiled by CIBER at Purdue University

HOME PAGES GIVING INFORMATION ON ELECTRONIC COMMERCE

Palestine ECRC	**http://www.ptxecrc.com/**	*EC/EDI courses and seminars, events planned, scanning & conversion, other sites, and more*
San Antonio ECRC	**http://www.saecrc.org/**	*Downloads of free stuff, RFQ browser, Government certified VANs, Federal Supply Groups and Classes FSG & FSC, classes and seminars, and more.*
Scranton ECRC	**http://www.ecrc.uofs.edu/**	*Federal Supply Groups and Classes FSG & FSC, Standard Industrial Classes SIC, and much more.*
DoD EC Office	**http://www.acq.osd.mil/ec/**	*Much information on the DoD EC/EDI program and sources of assistance.*
Guide to the Internet	**http://www.nova.edu/Inter-Links/bigdummy/eeg_toc.html**	
	http://www.premenos.com/	*Much help concerning definition of terms, conferences, contacts, etc.*
BABEL	**http://www.access.digex.net/~ikind/babel96b.html**	A Glossary of Computer Related Abbreviations and Acronyms
U.S. Internet Service Providers List	**http://www.primus.com/providers/#INDEX**	
	http://www.govcon.com/	*A good source for FACNET searching and CBD queries*
Federal Acquisition Jumpstation	**http://procure.msfc.nasa.gov/fedproc/home.html**	*A large listing of Internet sites related to federal acquisitions.*
State of Texas	**http://www.texas.gov/business.html**	*Texas bid opportunities and Texas-One (the electronic Texas marketplace).*
NASA	**http://www.hq.nasa.gov/office/procurement/**	*NASA business opportunities*
Procurement Assistant Jumpstation	**http://www.fedmarket.com/procinet.html**	*A huge listing of procurement sites.*
SBA	**http://www.sbaonline.sba.gov/**	*SBA resource information.*
National Contract Management Association	**http://www.cyberserv.com/ncma/**	*NCMA's home page.*
DLA (Defense Logistics Agency)	**http://www.supply.dla.mil/**	

For more information

National ECRC Program - Technology Hub
Peter R. Walker
Concurrent Technologies Corporation
1450 Scalp Ave.
Johnstown, PA 15904
800-318-9223
e-mail: walker@ctc.com

Atlantic Regional ECRC
Robert Fulton
Georgia Institute of Technology
813 First Drive, Room 452
Atlanta, GA 30332-0140
404-894-7409
e-mail: robert.fulton@me.gatech.edu

Bremerton Regional ECRC
Ed Wilson
Hearthstone Center
4312 Kitsap Way, Suite 104
Bremerton, WA 98312
360-478-0333
800-478-3933
e-mail: wilson@ctc.com

Cleveland Regional ECRC
Kent Kemmerer
CAMP
2415 Woodland Ave.
Cleveland, OH 44115
800-991-3272
e-mail: kent.kemmerer@camp.org

Dayton Regional ECRC
Joe Homan
RJO Enterprises, Inc.
240 West 5th St., Room 13000
Dayton, OH 45402-2302
513-449-6060
e-mail: jhoman@cole.sinclair.edu

Fairfax Regional ECRC
Bill Young
Dimensions International Inc.
10640 Page Ave., Suite 400
Fairfax, VA 22030
703-691-1507
e-mail: byoung@ecrc.gmu.edu

Johnstown Regional ECRC
Larry Michalec
Concurrent Technologies Corporation
1450 Scalp Ave.
Johnstown, PA 15904
800-231-2772
e-mail: michalec@ctc.com

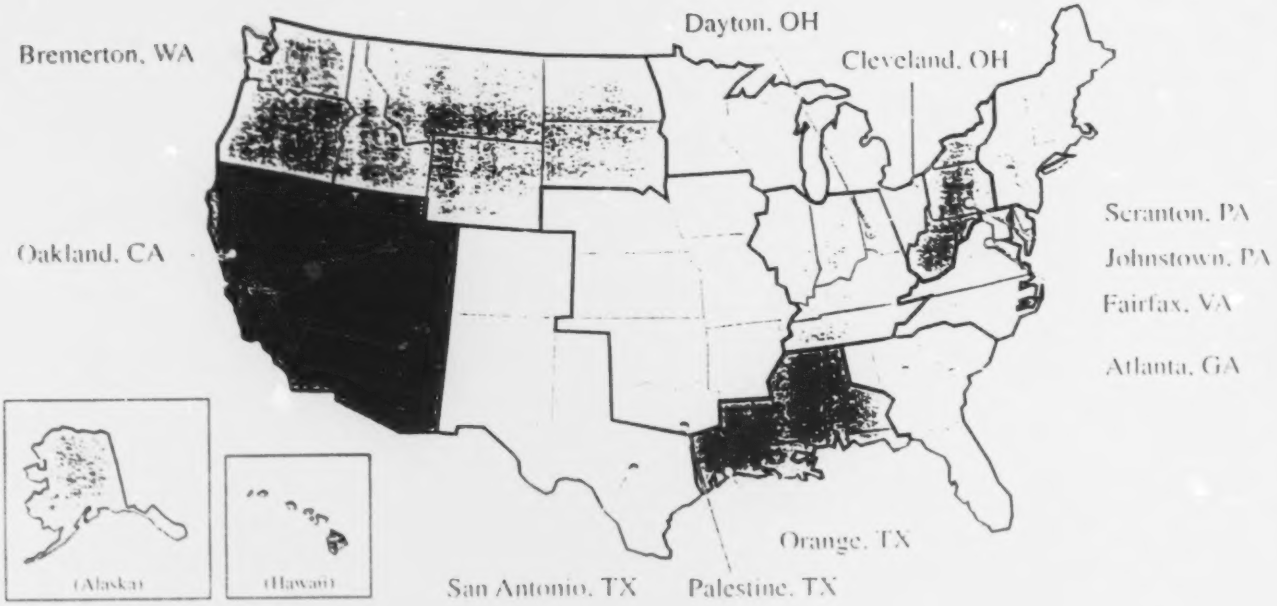
Oakland Regional ECRC
Michael Shaw
12500 Campus Drive
Oakland, CA 94619
510-531-1777
e-mail: shaw@ctc.com

Orange Regional ECRC
Paula DeWitte
Knowledge Based Systems Inc.
300 North Fourth St.
Orange, TX 77630-5702
409-882-3950
e-mail: pdewitte@ecrc.kbsi.com

Palestine Regional ECRC
Michael LaBeau
I-NET Inc.
2000 S. Loop 256, Suite 11
Palestine, TX 75801
800-209-2772
e-mail: mikelabeau@ptxecrc.com

San Antonio Regional ECRC
Jarrett (Butch) McGehee
Sunset Resources Inc.
4318 Woodcock Dr., Suite 200
San Antonio, TX 78228
210-732-1141
e-mail: butch@saecrc.org

Scranton Regional ECRC
Mason Linn
University of Scranton
Harper-McGinnis Wing
St. Thomas Hall, Rm T583
Scranton, PA 18510-4693
800-575-3272
e-mail: linnm1@lion.uofs.edu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Oakland, CA
Orange, TX
San Antonio, TX
Palestine, TX
(Alaska)
(Hawaii)

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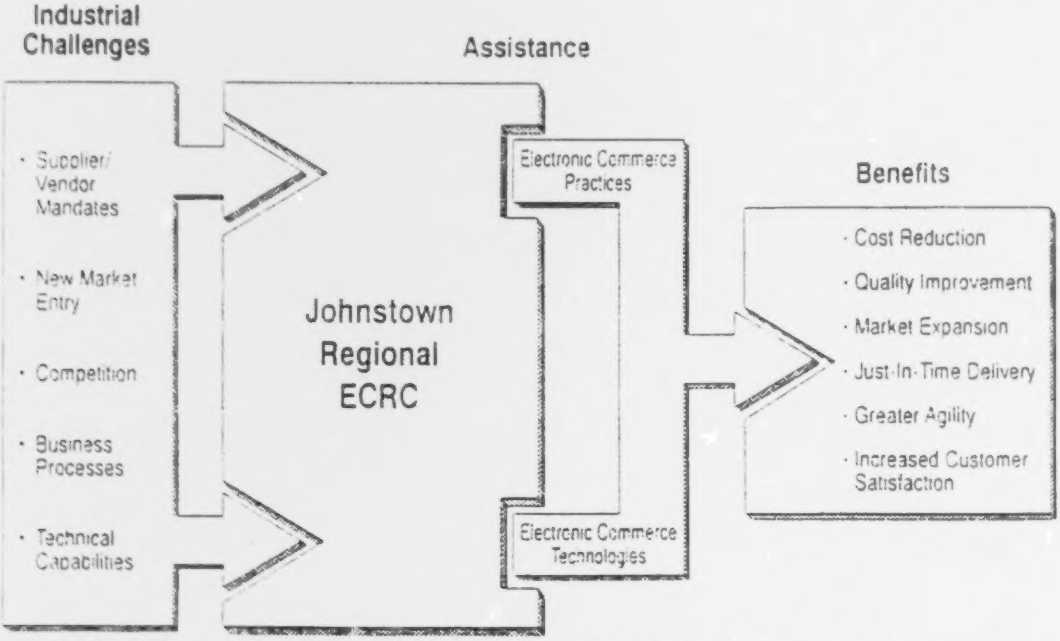
Industrial Challenges
Assistance
Benefits
· Supplier/ Vendor Mandates
· New Market Entry
· Competition
· Business Processes
· Technical Capabilities
Johnstown Regional ECRC
Electronic Commerce Practices
Electronic Commerce Technologies
· Cost Reduction
· Quality Improvement
· Market Expansion
· Just-In-Time Delivery
· Greater Agility
· Increased Customer Satisfaction

An illustration of the ECRC service model and the benefits of electronic commerce.

EDI Orientation

Presented by :
Electronic Commerce Resource Center (ECRC)
Operated by:
Concurrent Technologies Corporation (CTC)

Target Audience: Business Managers, Computer Support Personnel, and Accounting Personnel

Length: Four-Hour Course

Course Level: Introductory

Prerequisites: None

Course Description: *Electronic Data Interchange (EDI)* is a method for the digital transfer of routine business documents in a standard format. EDI transactions are being required to transmit data packages across industrial networks and among contractor and the Department of Defense (DOD) computer systems. This course discusses definitions of EDI-related terminology, the background of the initiative, benefits associated with EDI implementation, and the components and guidelines necessary to implement EDI. In addition, the course addresses existing EDI initiatives within the Government, challenges encountered in the implementation process, and the future of EDI.

Course Objectives: At the completion of this course, the student will be able to:

- Discuss the benefits associated with EDI
- List components necessary to implement EDI
- Describe one methodology for implementing EDI
- Discuss some current EDI initiatives
- Describe challenges implementing EDI

Course Outline:

Module 1: Definitions, Background, and Benefits

- Definitions
    - ★ Electronic Data Interchange (EDI)
    - ★ Value Added Network (VAN)
    - ★ Trading Partner
    - ★ Transaction Set
- EDI background
- EDI benefits
- Success stories

Module 2: Components

- Standards
    - ★ Transactions types
    - ★ Transaction sets
    - ★ Transmission structure
    - ★ Document structure
    - ★ Transaction flow
    - ★ EDI standards
- Software
    - ★ Stand-alone
    - ★ Integrated
    - ★ Server/Gateway
- Hardware
    - ★ Personal computers
    - ★ Mini and mainframe computers
    - ★ Modem
- Communication
    - ★ Point-to-point
    - ★ Value Added Network (VAN)
    - ★ Interconnect strategy

Module 3: Implementation

- Decide implementation strategy
- Determine level of integration
- EDI implementation process
    - ★ Obtain management approval
    - ★ Establish project team
    - ★ Educate personnel
    - ★ Perform EDI audit
    - ★ Develop cost and benefit analysis
    - ☆ Select participants and components
    - ★ Establish EDI contracts
    - ★ Conduct pilot test
    - ★ Evaluate and review

Module 4: EDI Players

- EDI users
- Standards making organizations
- Value Added Networks (VANs)
- EDI usage
- Federal Electronic Commerce Acquisition Team (FECAT)
- Government
- Industry
- Healthcare
- Other initiatives

Module 4A: Government Players

- Government benefits
- Supplier benefits
- Military
- Defense Logistics Agency (DLA)
- Internal Revenue Service (IRS)

Module 5: Challenges, Future, and Summary

- Challenges
  - ★ Cultural impact
  - ★ Commitment
  - ★ Legacy environment
  - ★ Maturity of standards
- Future
  - ★ Interactive EDI
  - ★ Technical documents
  - ★ Open trading
  - ★ Value Added Banks (VABs)
  - ★ Electronic Funds Transfer (EFT)
  - ★ Communications protocol
- EDI demonstration

Getting Started with Electronic Commerce Course

Presented by :
Electronic Commerce Resource Center (ECRC)
Operated by:
Concurrent Technologies Corporation (CTC)

Target Audience: Company management and staff

Length: Four-Hour Course

Course Level: Introductory

Prerequisites: None

Course Description: *Getting Started with Electronic Commerce* discusses the Internet, which is a significant resource for businesses throughout the world. Not only are businesses using the Internet for communicating with business partners, they are using the Internet as an information resource and for marketing products and services. This course provides an introduction to the history and evolution of the Internet and various on-line services. Additionally, the course will provide guidelines, criteria, and information sources for evaluating and choosing software and hardware, as well as companies that provide access to the Internet and other public networks. The course also discusses how a business or individual would connect to the Internet and covers some of the resources available on the Internet.

Course Objectives: At the completion of this course, the student will be able to:

- Discuss what the Internet is and how it works
- Explain what information services are available on the Internet and how these services can be accessed
- Determine what they must do to get connected to the Internet
- Explain the types of information and services that are of interest to the business person
- Define some common Internet terminology

Course Outline:

Introduction: What the Internet is

- Available technologies to improve business operations
- Current technologies already in use
- Leveraging Internet capabilities for competitive advantage
- Internet as the foundation to compete in the future
- Electronic Commerce (EC) definition
- Types of Electronic communication
- Information Superhighway and National Information Infrastructure
- Current Internet transmission and network capabilities
- Reasons for getting on the Internet
- Internet success stories

Module 1: Background

- Internet history
- Network types
    - ★ Local Area Networks (LANs)
    - ★ Wide Area Networks (WANs)
    - ★ Value Added Networks (VANs)
    - ★ On-line Services
- Network Definition
- Network Requirements
    - ★ Hardware
    - ★ Software
    - ★ Communication
- LAN definition
- WAN definition
- VAN definition
- On-line service examples and common features
- How the Internet Works
    - ★ Data transmission with routers
    - ★ Transmission Control Protocol/Internet Protocol (TCP/IP) Language
    - ★ Unique IP addresses or domain name systems
    - ★ Internet clients and servers

Module 2: Overview of the Internet Basics

- Internet services
    - ★ Electronic mail
    - ★ Internet mailing lists
    - ★ Usenet news groups
    - ★ Chat and Internet Relay Chat (IRC)
    - ★ Library catalogs
    - ★ Hytelnet
    - ★ Wide Area Information Service (WAIS)
    - ★ World Wide Web (WWW)
- Accessing and searching for information on the Internet
    - ★ File Transfer Protocol (FTP) and Anonymous FTP
    - ★ Using Telnet Protocol to Access Resources Available on Other Computers
    - ★ Finding FTP files using Archie
    - ★ Searching for information with Gopher
    - ★ Indexing text in Gopher menus with Veronica
    - ★ Searching the Web with browsers and web crawlers

Module 3: Requirements, Guidelines, and Access Providers

- Components
  - ★ Hardware
  - ★ Software
  - ★ Connection
- Connection types
  - ★ Direct connection
  - ★ Indirect connection
- Software
  - ★ Transmission Control Protocol/Internet Protocol (TCP/IP)
  - ★ Serial Line Internet Protocol/Point-to-Point Protocol (SLIP/PPP)
- Commercial on-line services
- Commercial tools for a direct connection

Module 4: Using the Internet for Electronic Commerce

- Internet addresses
- Useful information on the Internet
- Internet commercial uses
- Issues and concerns for the business person
  - ★ Security
  - ★ Firewalls
  - ★ Encryption
- Summary of technology components
- How to reach the ECRC for help

Business Opportunities with the DOD Through EDI

Presented by :
Electronic Commerce Resource Center (ECRC)
Operated by:
Concurrent Technologies Corporation (CTC)

Target Audience:	Department of Defense Suppliers
Length:	Four Hour Course
Course Level:	Introductory
Prerequisites:	None

Course Description: *Business Opportunities With the DOD Through EDI* discusses the DOD's Electronic Data Interchange (EDI) requirements. EDI is the computer-to-computer exchange of business documents in a standard format between business partners. This course provides background information on the DOD Electronic CommerceEC/EDI Program, including the Federal Acquisition Streamlining Act of 1994 that mandated the federal government's move to electronic commerce. The course examines the issues involved in selecting EDI hardware, software, and services necessary to conduct business with the DOD. The federally mandated contractor registration process is discussed and contractor registration software is demonstrated. In addition, the course identifies how to receive solicitations and bid for DOD contracts via EDI. The course handout contains checklists for selecting EDI software and service providers, listings of EDI resources, and a glossary of EDI-related terms. Armed with this information, government suppliers can select an EDI strategy that best meets their business needs, which will place them on-track for conducting their first EDI transaction and making their first electronic bid for DOD solicitations. At the completion of this course, each student receives a workbook which expands on these topics and serves as a reference guide.

Course Objectives: At the completion of this course, the student will be able to:

- Explain why the government is embracing EDI
- Explain the business case for a supplier to adopt EC/EDI
- Define EDI
- Discuss the mechanics or fundamentals of doing EDI with the federal government
- Locate support for implementing EC/EDI
- Describe the federally mandated contractor registration process

Course Outline:

Introduction

- Objectives of seminar
- Electronic Commerce Resource Centers (ECRC)
    - ★ ECRC services
    - ★ Partnering

Module 1: Fundamentals of EDI

- EDI definition
- Change in business processes
- EDI components
  - ★ EDI standards
  - ★ EDI structure
  - ★ Electronic envelope
  - ★ Implementation Conventions
- EDI communications
  - ★ Value Added Networks (VANs)
  - ★ Typical VAN Services
- EDI software
- EDI hardware
  - ★ Hardware for computing
  - ★ Suggested EDI PC requirements
  - ★ Hardware for communications
- EDI with the DOD
  - ★ Trading Partner Profile (838)
  - ★ Request for Quotation (840)
  - ★ Response to RFQ (843)
  - ★ Contract Award Summary (836)
  - ★ Purchase Order (850)
- Transaction sets planned

Module 2: Choosing a VAN

- Certified VANs
- Choosing a VAN
  - ★ Cost
  - ★ Reporting
  - ★ Market coverage
  - ★ Additional services

Module 3: Choosing EDI Software

- Basic EDI software functions
- EDI translation software
  - ★ Stand-alone PC
  - ★ Integrated EDI
  - ★ EDI Server/Gateway
- EDI software capabilities
  - ★ Communications
  - ★ System utilities
  - ★ Customized operations routines
  - ★ System maintenance
  - ★ Report functions
  - ★ Importing and exporting data with other computer applications
- Cost Considerations

Module 4: Government Requirements and Objectives

- Current buying procedures
- EC/EDI milestones/growth
- Federal Acquisition Streamlining Act (FASA) of 1994
    - ★ FASA's goals
    - ★ EC emphasis of FASA
    - ★ Simplified Acquisition Threshold
    - ★ Micropurchases
    - ★ FACNET-Federal Acquisition Computer Network
    - ★ How FASA affects suppliers
- Projected EC/EDI requirements
- Reasons for doing EDI

Module 5: EDI Opportunities Today: A Recap of Network Entry Point (NEP) Data

- Summary of RFQs posted via Network Entry Points (NEP)
- Days solicitations stay open
- Days to deliver
- Solicitations by FSC
- Awards by FSC
- Opportunities in perspective

Module 6: Small-to-Medium-Sized Enterprise (SME) Process of Implementing EDI with the DOD and Federal Agencies

- Registration today
- Sources for solicitations today
- New way of doing business
- How to do EC/EDI with the government
- Contractor registration software
- DODs ANSI X12 Transaction Sets
- DOD compliance testing

Module 7: EDI Case Studies of Small Suppliers

- Markal Company
- SSK, Inc.

Module 8: Electronic Commerce Technologies

- Bulletin Boards (BBSs)
- Existing BBSs
- On-line services
- Electronic commerce help
- EC and the Internet
- Sources of info--World Wide Web (WWW) sites
- Course summary

Technical Data Exchange (TDE) Orientation

Presented by :
Electronic Commerce Resource Center (ECRC)
Operated by:
Concurrent Technologies Corporation (CTC)

Target Audience:	Government Acquisition Personnel: Modules 1, 2, 3, 3A, 4B, 5 Government Technical Personnel: Modules 1, 2, 3, 4A, 5 Manufacturers: Modules 1, 2, 3, 4A, 5 Procurement Assistance Centers: Modules 1, 2, 3A, 5
Length:	Four-Hour Course
Course Level:	Introductory
Prerequisites:	None

Course Description: *Technical Data Exchange (TDE)* is the electronic interchange of technical information such as engineering drawings, technical manuals, technical illustrations, and scanned images. This course provides an overview of standards that address the exchange of the various types of technical data as they apply to the acquisition or manufacturing environment. It discusses the components required and the implementation process for transitioning from a paper-intensive environment to an environment that provides for the generation, exchange, management, and use of digital data.

Course Objectives: At the completion of this course, the student will be able to:

- Define TDE
- Define standards and specifications and describe their advantages
- Determine what is needed to exchange technical data based on your requirements
- Describe who is involved in TDE
- Describe the challenges associated with TDE and how to overcome them
- Describe the future of TDE

Course Outline:

Module 1: Technical Data Exchange (TDE) Overview

- Types of technical information addressed by course:
    - ★ Product data
    - ★ Engineering data
    - ★ Technical documents
    - ★ Technical illustrations
- TDE definition
- Reasons for using TDE
- Standards definition
- Interchange specifications definition

- Governing neutral file formats through standards
- Difference between open and proprietary standards
- Standards and specifications advantages
    - ★ Compatibility
    - ★ Reusability
    - ★ Communication
    - ★ Data accuracy
    - ★ Multiple user capability
- Standards by government and industry standards development
- Continuous Acquisition and Life-cycle Support (CALS)
- Reasons for using TDE:
    - ★ Acquisition and procurement
    - ★ Exchange of business data through Electronic Data Interchange (EDI)
    - ★ Data input and output within an integrated data environment
- Effect of TDE on computing environment
- Commercial Off the Shelf (COTS) software benefits

Module 2: CALS Initiative

- Joint government-industry initiative to improve business
- CALS strategy and origin
- DOD CALS implementation background:
    - ★ DOD Instruction – 5000.2
    - ★ DOD CALS Implementation Infrastructure and its modernization
    - ★ Joint CALS (JCALS) capabilities
    - ★ Joint Engineering Data Management Information and Control System (JEDMICS)
- DOD CALS players
- CALS/CE Industry Steering Group (ISG)
- CALS benefits:
    - ★ Technology payoffs
    - ★ Cost savings
    - ★ Improved data accuracy
    - ★ Reduced storage space
- CALS success stories:
    - ★ F22 program
    - ★ AEGIS program
    - ★ Sacramento Air Logistics Center Electronic Procurement Project
- CALS Standards:
    - ★ MIL-STD-1840: Automated Interchange of Technical Information
    - ★ MIL-STD-974: Contractor Integrated Technical Information Service (CITIS)
    - ★ MIL-D-28000: Digital Representation for Communication of Product Data
    - ★ MIL-M-28001: Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text
    - ★ MIL-M-28002: Requirements for Raster Graphics Representation in Binary Format
    - ★ MIL-D-28003: Digital Representation for Communication of Illustration Data: CGM Application Profile
    - ★ Interactive Electronic Technical Manual (IETM)

  - Electronic standards
  - Management-related standards

Module 3: Components

- Standards for exchange of digital data:
  - Initial Graphics Exchange Specification (IGES)
  - Standard Generalized Markup Language (SGML)
  - CCITT Group IV Raster
  - Computer Graphics Metafile (CGM)
  - Standard for Exchange of Product Model Data (STEP)

Module 4: Components in a DOD Acquisition/Procurement Environment

- Acquisition and procurement information flow
- DoD Acquisition Process as Implementation Guide/CALS components:
  - MIL-HDBK-59 (developed by the DoD)
  - CALS Standards and Specifications
  - Government Concept of Operations (GCO)
  - CALS Implementation Plan (CALSIP)
- GCO Process
  - Determine data type deliverable
  - Determine data use/processing
  - Determine data user infrastructure
  - Determine data delivery access method
  - Determine data format for delivery
  - Determine CALS-compliant data interchange standards
  - Determine media type
- CALS Implementation Plan (CALSIP) definition
- Relationship of CALSIP to the acquisition process
- CALSIP contents

Module 4A: Integrating TDE in a Manufacturing Environment

- Functions with an integrated manufacturing environment
  - Computer-Aided Design (CAD)
  - Computer-Aided Manufacturing (CAM)
  - Computer-Aided Engineering (CAE)
- ITU-Group IV – Scanning for Digital Image
- Machine digitizing
- Materials management
- Output format for review, approval and archiving
- Rapid prototype
- Standards for Computer Numerical Control (CNC)
- Process planning
- Product Data Management (PDM) and Electronic Data Management (EDM):
  - Engineering change management

    - ★ Formal configuration management
    - ★ Engineering work-in-progress (workflow)
    - ★ Product structure management
    - ★ Document and data vault
    - ★ Integration with document imaging and CAD
- Enabling technologies and philosophies:

Module 4B: Integrating TDE in an Acquisition/Procurement Environment

- Acquisition definition
- Procurement definition
- Acquisition process steps
    - ★ Acquisition planning and requirements determination
    - ★ Solicitation and selection process
        - ♦ Section B: supplies, services, and prices/costs
        - ♦ Section C: description/specification/statement of work
        - ♦ Section E: inspection and assistance
        - ♦ Section H: special contract requirements
        - ♦ Section J: attachments
        - ♦ Section L: instruction to offerors
        - ♦ Section M: evaluation
        - ♦ Proposal evaluation criteria
        - ♦ CITIS evaluation criteria
    - ★ Design and development processes

Module 5: Challenges and Future

- Challenges
    - ★ Cultural impact
    - ★ Commitment
    - ★ Legacy (existing) environment
    - ★ Maturity of standards
- Future
    - ★ Integrated system databases
    - ★ Procurement process improvement
- Standard for the Exchange of Product Model Data (STEP)

Legacy Data Management Course

Presented by :
Electronic Commerce Resource Center (ECRC)
Operated by:
Concurrent Technologies Corporation (CTC)

Target Audience:	Top Management, Mid-level Management, Technical Personnel
Length:	Four-Hour Course
Course Level:	Introductory
Prerequisites:	None

Course Description: *Legacy Data Management (LDM)* is the process of identifying historical information (such as old paper documents, punched computer cards, or computer tapes) and evaluating potential requirements and solutions for the long-term storage or usage of that information. Legacy data includes filed, stored, or on-line business data. This course introduces the subject of legacy data and its management as well as some of the issues associated with LDM. The planning for and implementation of a LDM project will be discussed along with the computer software and hardware requirements. An introduction to integrating legacy data into an existing computer information system will also be provided.

Course Objectives: At the completion of this course, the student will be able to:

- Define legacy data
- Identify the requirements for electronic legacy data management
- Define digital data
- Define the end goals of legacy data management
- Describe the conversion process
- Describe the hardware and software necessary for LDM
- Identify and discuss LDM standards

Course Outline:

Module 1: Legacy Data and its Management

- Legacy Data definition
- Legacy Data Mangement (LDM) methods
- Legacy Data Management definition
- LDM success story examples
    - ★ General Motors
    - ★ Research Laboratory
    - ★ Petroleum Industry
- Electronic LDM requirements
- Digital Data definition

- Reasons for digital LDM
  - ★ Greater profitability and cost savings
  - ★ Improved compatibility
  - ★ Enhanced data consistency
  - ★ Greater efficiency and productivity
  - ★ Reduced paperwork
  - ★ Greater accuracy
  - ★ Minimal data loss

Module 2: Implementation

- Strategic goals
- Making data usable
- Conversion plan development
  - ★ Perform initial needs analysis
  - ★ Gain management approval
  - ★ Establish project team

Module 3: LDM Integration

- Definitions
  - ★ Non-integrated LDM
  - ★ Internal integration
  - ★ External integration
  - ★ Re-engineered LDM
- Integration tools
- Definition of Product Data Management (PDM)
- PDM system requirements
  - ★ Acquiring documents
  - ★ Storing documents
  - ★ Retrieving and manipulating documents
  - ★ Accessing different locations
  - ★ Tracking and managing data
- LDM Traditional Model VS PDM Model
- Internal infrastructure of PDM system
- Steps in backfile conversion preparation
  - ★ Scope documents
  - ★ Determine scanning requirements
  - ★ Determine quality control requirements
  - ★ Determine document preparation requirements
  - ★ Determine indexing and database requirements
  - ★ Determine how to conduct the conversion
  - ★ Determine outsourcing requirements
  - ★ Determine when to start the conversion process
- Using standards
  - ★ Initial Graphics Exchange Specification (IGES)
  - ★ Standard Generalized Markup Language (SGML)

- Computer Graphics Metafile (CGM)
- Standard for the Exchange of Product Model Data (STEP)
- Contractor Integrated Technical Information Service (CITIS)

Standard Generalized Markup Language (SGML) Course

Presented by :
Electronic Commerce Resource Center (ECRC)
Operated by:
Concurrent Technologies Corporation (CTC)

Target Audience:	Business Managers, Computer Programmers/Support Personnel, Publications Personnel and Authors
Length:	Four-Hour Course
Course Level:	Introductory
Prerequisites:	None

Course Description: *Standard Generalized Markup Language (SGML)* is an international standard which enables the electronic exchange of documents between dissimilar computer systems and applications. The SGML standard defines a set of markup tags that are used to identify document elements based upon their structural role. The implementation of SGML promotes cross-platform compatibility and provides for reduced rekeying of information, easier formatting, on-line document delivery, creating structured information, and greater accessibility. This course introduces the definitions and components of SGML. In addition, the software and hardware requirements for SGML implementation will be discussed.

Course Objectives: At the completion of this course, the student will be able to:

- Define SGML
- Name the major players in the SGML arena
- Describe the benefits associated with SGML and how they apply to an organization
- Identify the components necessary to implement SGML
- Choose the most appropriate SGML implementation strategy
- Overcome the challenges associated with SGML implementation
- Follow step-by-step procedures to implement SGML

Course Outline:

Module 1: Overview

- Document production process evolution and the need for standardization
- Standards definition
- Electronic interchange of information using standards
- Standard Generalized Markup Language (SGML) definition

- Electronic document parts
    - ★ Structure
    - ★ Content
    - ★ Formatting
- SGML document parts

Module 2: Benefits

- Transferring data
    - ★ System to system
    - ★ Application to application
- Information outlives system
- Structured files and intelligent documents
- Data created once and used many times
- Configuration management
- Improved search and retrieval time
- Decreased mailing costs

Module 3: Components

- ISO 8879: Information Processing--Text and Office Systems--SGML
    - ★ SGML declaration
    - ★ Document Type Definition (DTD)
    - ★ Elements and tags
    - ★ Connectors and ordering indicators
    - ★ Entities, attributes and notations
    - ★ Document analysis
    - ★ Industry-specific SGML applications
- Libraries
    - ★ Baseline tagsets
- Software
    - ★ Word processors
    - ★ SGML editors
    - ★ Parsers
    - ★ Translators
    - ★ Publishing systems
    - ★ Databases
    - ★ Multimedia and hypermedia
    - ★ Graphics
- Hardware

Module 3A: HTML

- HTML definition
- Reasons for use of HTML
- HTML and SGML differences

- HTML components
    - ★ Standards
    - ★ Software
    - ★ Hardware configurations
- Future of HTML

Module 3B: MIL-M-28001

- Continuous Acquisition and Lifecycle Support (CALS) description
- MIL-M-28001: Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text
    - ★ Formatting Output Specification Instance (FOSI)
    - ★ Data type
- Baseline tagset
- Specification definition
- Specification contents
- MIL-HDBK-SGML
- Other standards and specifications associated with MIL-M-28001
    - ★ MIL-M-38784: Technical Manuals: General Style and Format Requirements
    - ★ MIL-STD-1840: Automated Interchange of Technical Information
    - ★ MIL-STD-974: Contractor Technical Information Service
    - ★ MIL-STD-IETM: Interactive Electronic Technical Manuals
    - ★ MIL-STD-D-28003: Computer Graphics Metafile
    - ★ MIL-R-28002: Initial Graphics Exchange Specification
- SGML Reuse Library
- SGML Tagset Registry
- MIL-M-28001 future
- Hardware
- Software

Module 3C: IETMS

- Interactive Electronic Technical Manual (IETM) definition
- IETMs classes
- Interactive Electronic Technical Manuals (IETMs) definition
    - ★ General specifications
    - ★ Database
- Components
- IETM specifications
- General Content, Style Format and User Interaction Requirements (MIL-M-87269)
- MIL-D-87269: Database Revisable
- MIL-Q-87270: Quality Assurance Program
- Metafile for Interactive Documents (MID) definition

- Software
    - ★ Authoring systems
    - ★ Presentation systems
    - ★ Databases
    - ★ Parsers
    - ★ MID translators
- Libraries
- Hardware

Module 4: Implementation

- SGML implementation plan
    - ★ Obtain management approval
    - ★ Establish project team
    - ★ Perform needs analysis
    - ★ Examine options of data input
    - ★ Determine strategy to input data
    - ★ Perform cost and benefit analysis
    - ★ Select components
    - ★ Educate personnel
    - ★ Conduct pilot test
    - ★ Evaluate and review

Module 5: Integration

- Reasons for using a database
- Storing SGML documents in a database
- Constructing SGML documents in databases
- SGML and EDI
- SGML and STEP

Module 6: Players/Success Stories

- Why government and industry organizations use SGML
- SGML users
    - ★ Air Transportation Association (ATA)
    - ★ Society of Automotive Engineers (SAE)
    - ★ Pharmaceuticals
    - ★ Internal Revenue Services (IRS)
    - ★ Novell
    - ★ Boeing

Module 7: Issues

- Cultural issues
    - ★ Personnel education
    - ★ Responsibility assignment
- Management issues
    - ★ Monetary investments
    - ★ Time dedication
    - ★ SGML level
    - ★ Hardware and software needs
    - ★ Inconsistent structure of documents
- Technology issues
    - ★ Legacy environment
    - ★ Business partner capabilities
    - ★ Configuration management
    - ★ Document analysis

Module 8: Future

- ISO 10744: Hypermedia/Time-based Structuring Language (HYTIME)
- ISO 10179: Document Style, Semantics and Specification Language (DSSSL)
- MIL-M-28003: Computer Graphics Metafile (CGM)
- Electronic review

OFFICES OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION (OSDBU) WITH THEIR WOMEN-OWNED BUSINESS REPRESENTATIVES (WOBREP)

The OSDBUs offer small businesses information on procurement opportunities, guidance on procurement procedures, and identification of both prime and subcontracting opportunities.

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The Pentagon - Rm. 2A340
Washington, DC 20301-3061
Director: Vacant
WOBREP: Tim Foreman
Tel: (703) 697-1688
Fax: (703) 693-7014

Defense Logistics Agency
Cameron Station
5010 Duke St., Rm. B6-170
Alexandria, VA 22304-6130
Director: Lloyd C. Alderman
WOBREP: Anthony Kudders
Tel: (703) 274-6471
Fax: (703) 274-0565

Education Department
400 Maryland Ave.
Rm. 3120 (ROB #3)
Washington, DC 20202-0521
Director: Daniel Levin
WOBREP: Ben Miller
Tel: (202) 708-9820
Fax: (202) 401-6477

Energy Department
1707 H St., NW, Rm. 904
Washington, DC 20585
Director: Leonel Miranda
Deputy: Pa.:: Terban
WOBREP: Brenda DeGraffenrei
Tel: (202) 254-5583
Fax: (202) 254-3989

Environmental Protection Agency
401 M Street, SW, 1230-C
Washington, DC 20460
Director: Leon H. Hampton
WOBREP: Margie A. Wilson
Tel: (703) 305-7777
Fax: (703) 305-6462

General Services Administration
18th & F Streets, NW, Rm. 6029
Washington, DC 20405
Director: Joan Parrott-Fonseca
Deputy: Miranda Jackson
WOBREP: Joan Fletcher
Tel: (202) 501-1021
Fax: (202) 501-5938

Health & Human Services Department
200 Independence Ave. SW, Rm. 517D
Washington, DC 20201
Director: Verl Zander
WOBREP: Angel Graves
Tel: (202) 690-7300
Fax: (202) 690-8772

Housing & Urban Development Dept.
451 7th Street SW, Rm. 3130
Washington, DC 20410
Director: Roosevelt Jones
WOBREP: Clarence White
Tel: (202) 708-1428
Fax: (202) 708-7642

Interior Department
1849 C St., NW, Rm. 2727
Washington, DC 20240
Director: Kenneth Kelly
Deputy: Ralph Rausch
WOBREP: Doris Sanford
Tel: (202) 208-3493
Fax: (202) 208-5048

Justice Department
12th Pennsylvania Ave. NW.
Rm. 3235 Anel Rios Bldg
Washington, DC 20530
Director: J. Kenneth Bryan
WOBREP: Eleanore Geary
Tel: (202) 616-0521
Fax: (202) 616-1717

Labor Department
200 Constitution Ave., NW, Rm. C2318
Washington, DC 20210
Director: June M. Robinson
Deputy: Fredrick Trakowski
WOBREP: Katherine Lee
Tel: (202) 219-9148
Fax: (202) 219-9167

National Aeronautics & Space Admin.
300 E Street, SW,
Rm. 9K70, Maze Code K
Washington, DC 20546
Director: Ralph H. Thomas
WOBREP: Rae C. Martel
Tel: (202) 358-2088
Fax: (202) 358-3261

Navy Department
2211 Jefferson Davis HWY
Crystal Plaza Building 5, Rm. 120
Arlington, VA 20360-5000
Director: Don Hathaway
Deputy: Joe Horvath
WOBREP: Janet Koch
Tel: (703) 602-2700
Fax: (703) 602-2477

State Department
1701 Fort Myer Drive Rm. 633 (SA-6)
Rosslyn, VA 22209
Director: Durie White
WOBREP: Linda Taylor
Tel: (703) 875-6824
Fax: (703) 875-6825

Transportation Department
400 7th Street, SW, Rm. 9414
Washington, DC 20590
Director: Ms. Luz Hopewell
WOBREP: Ms. Pat Hodge
Tel: (202) 366-1930
Fax: (202) 366-7228

Treasury Department
15th & Pennsylvania Ave., NW,
Rm. 6100 - The Annex
Washington, DC 20220
Director: Debra Sonderman
WOBREP: Daniel F. Sturdivant
Tel: (202) 622-0530
Fax: (202) 622-2273

Veterans Affairs Department
810 Vermont Ave., NW,
OSDBU 005SB
Washington, DC 20420
Director: Scott Denniston
WOBREP: Mary Ella Stormant
Tel: (202) 376-6996
Fax: (202) 233-4952

OTHER PROCUREMENT AGENCIES, BUREAUS AND ORGANIZATIONS

ACTION
1100 Vermont Ave., NW,, Rm. 2101
Washington, DC 20525
Attn: Margaret McHale, Division
Procurement & Grants
WOBREP: Jean McCamley
Tel: (202) 606-6150
Fax: (202) 606-5127

Administrative Office of US Courts
1120 Vermont Ave., NW,, Rm. 907
Washington, DC 20544
Attn: Mike D'Onofrio, Chief
Procurement & Property Management
WOBREP: Don Seay
Tel: (202) 633-6299

Agency for International Development
1100 Wilson Blvd, (SA-14) Rm. 1200A
Arlington VA 20523-1414
Director: Ivan R. Ashley
WOBREP: Betty Briscoe
Tel: (703) 875-1551
Fax: (703) 875-1862

Commodity Futures Trading Commission
2033 K Street, NW,, Rm. 304
Washington, DC 20581
Attn: Joseph Mink, Director
Administrative Services Division
WOBREP: Denise Blacka
Tel: (202) 254-9735

Consumer Product Safety Commission
4330 East-West HWY Rm. 706
Bethesda, MD 20814-4408
Attn: David Schmeltzer, Director
Office of Compliance
WOBREP: John Barrett Jr.
Tel: (301) 504-0621

Corps of Engineers
Pulaski Building, Rm. 4117
20 Massachusetts Ave, NW,
Washington, DC 20314
Director: Diane S. Sisson
WOBREP: David Buettner
Tel: (202) 272-0725

Defense Nuclear Agency
6801 Telegraph Rd.
Alexandria, VA 22310-3398
Attn: Ms. Pat Brooks
Small Business Specialist
Tel: (703) 325-5021

Executive Office of the President
Office of Administration
New Executive Office Building Rm. 5001
725 17th Street, NW,
Washington, DC 20503
Director: Thelma Toler
Tel: (202) 395-3570
Fax: (202) 395-3982

Export-Import Bank
811 Vermont Ave., NW, Rm. - 1031
Washington, DC 20571
Attn: Hellen Wall
Tel: (202) 566-8951
Fax: (202) 566-7524

Farm Credit Administration
1501 Farm Credit Drive, Rm. 1215
McLean, VA 22102-5090
Michael Inlow
Contracts Branch
Tel: (703) 883-4147

Federal Communications Commissions
1919 M Street, NW,, - Rm. 408
Washington, DC 20554
Attn: Marilyn McDermett
Tel: (202) 634-1530

Federal Emergency Management Agency
Federal Center Plaza
500 C Street, SW., Rm. 728
Washington, DC 20472
Office of Acquisitions
WOBREP: Christine Makris
Tel: (202) 646-3721

Federal Maritime Commission
800 N Capital St., Rm. 980
Washington, DC 20573
Office Administative Services
WOBREP: Eloise Tallman
Tel: (202) 523-5900

Federal Mediation & Conciliation
2100 K Street, NW,, Rm. 908
Washington, DC 20427
Dan Funkhouser, Director, Office of
Administative Services
Tel: (202) 653-5270

Federal Trade Commission
6th & Pennsylvania Ave., NW, Rm 706
Washington, DC 20580
Director: Jean Selchick
WOBREP: Barbara Lorette
Tel: (202) 326-2260 or 2258
Fax: (202) 326-2050

Federal Transit Administration
400 7th Street, SW, Rm. 7412
Washington, DC 20590
Susan E. Schruth Acting Director of Grants
Small Business Contact: Geraldine Head
Tel: (202) 366-2285

General Accounting Office
441 S Street, NW., Rm. 2001
Washington, DC 20001
Rosalind Hart, Chief, Acquistions Br.
Tel: (202) 512-7751

Government Printing Office
North Capitol & H Sts., NW, Rm. C-897
Washington, DC 20401
Director: Alice S. Jennings
Tel: (202) 512-1365

International Trade Commission
500 E St., SW, - 214A
Washington DC 20436
David Spencer, Procurement Director
Tel: (202) 205-2730

Interstate Commerce Commission
12th & Constitution Ave N.W, Rm 1319
Washington, DC 20423
Tom Yates, Procurement Director
Procurement & Contracts
WOBREP: Dan King
Tel: (202) 927-7597
Fax: (202) 927-5158

Library of Congress
1701 Brightseat Rd.
Landover, MD 20785
Director of Contracts
Tel: (202) 707-8612

Marine Corps
3033 Wilson Blvd.
Clarendon Square Bldg.
Alrington, VA 22202
Sheila B. D'Agostino, Small Business
Specialist
Tel: (703) 696-1022

National Academy of Sciences
Office of Constracts and Grants
2001 Wisconsin Ave., NW, - Rm. 406
Washington, DC 20007
Director: Marypat Nowack
Tel: (202) 334-2254

National Archives & Records Admin.
8th St. & Penn Ave., NW, Rm. 403
Washington, DC 20408
David Kepley, Small Business Advocate
Tel: (202) 501-5110

National Endowment for Humanities
1100 Pennsylvania Ave., NW, Rm. 202
Washington, DC 20506
Barry Maynes, Administrative Services
WOBREP: Dennis Dola Sinski
Tel: (202) 606-8233
Fax: (202) 606-8243

National Labor Relations Board
1099 14th St. N.W. Ste. 7108
Washington, DC 20570
Director: Gloria Joseph
WOBREP: Paula Roy
Tel: (202) 273-3890

Nuclear Regulatory Commission
Maryland National Bank Bldg - R7217
7735 Old Georgetown Rd.
Bethesda, MD 20555
Director: Vandy Miller
WOBREP: Harris Coleman
Tel: (301) 492-4665
Fax: (301) 492-7048

National Science Foundation
4201 Wilson Blvd
Arlington, VA 22230
Director: Donald Senich
Tel: (703) 306-1391 or 5335
Fax: (202) 653-7699

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Office of Personnel Management
1900 E Street, NW, - Rm.1307
Washington, DC 20415
Director: Leutrell Osbome
Tel: (202) 606-2180
Fax: (202) 606-1464

Overseas Private Investment Corp
Sumner Square
1615 M Street, NW,
Washington, DC 20527
Richard K. Childress,
V.P Management Services
Tel: (202) 336-8520
Fax: (202) 408-9859

Peace Corps
1990 K Street, NW,, Rm. 6368
Washington, DC 20526
Joseph Radford, Director of Contracts
Tel: (202) 606-3513

Pennsylvania Avenue Development Corp.
1331 Pennsylvania Ave., NW,
Suite 1220-North
Washington, DC 20004-1703
Susan Zuzy
Tel: (202) 724-9068

Postal Service
475 L'Enfant Plaza West, SW,
Rm. 3821
Washington, DC 20260-5616
Director: Richard J. Hermandez
WOBREP: Sarah Smith
Tel: (202) 268-6578
Fax: (202) 268-4027

Railroad Retirement Board
1310 G Street, N.W. Ste. 500
Washington, DC 20005
Director: Marian Bowers Gibson
Tel: (202) 272-7742

Resolution Trust Corporation
801 17th St., NW,
Washington, DC 20434-0001
Joe Moore, Director
Minority & Women Outreach
Tel: (202) 416-6925

Securities and Exchange Commission
5th St., Rm. 2029
Washington, DC 20549
Richard Wulff, Chief
Office of Small Business Policy
Tel: (202) 942-8945

Small Business Administration
409 3rd St., SW,, 5th Floor
Washington, DC 20416
Lucille Brooks, Deputy Director
Small Purchase and Contracts
Central Office
Tel: (202) 205-6622

Smithsonian Institution
915 L'Enfant Plaza, SW,, Suite 3120
Washington, DC 20024
Manager: Ms. Era Marshall
Office of Equal Employment
Tel: (202) 287-3508
Fax: (202) 287-3492

Tennessee Valley Authority
1101 Market St., EB2B
Chattanooga, TN 37402
Director: George Provost
Tel: (615) 751-6269
Fax: (615) 751-6890

U.S. Information Agency
330 C St., SW,, Rm. 1619
HHS - South Bldg.
Washington, DC 20547
Director: Georgia Hubert
Tel: (202) 205-5404
Fax: (202) 401-2410

Washington Metropitan Area
Transit Authority Metro
600 Fifth Street NW,
Washington, DC 20001
Claude Swanson Director,
Office of Civil Rights
Tyrone Press, MBE Programs
Tel: (202) 962-1082

LIAISON OFFICES

Committee for Purchase from the Blind and other Severely Handicapped
Crystal Square 3, Rm. 403
1735 Jefferson Davis Highway
Arlington, VA 22202-3509
Beverly L. Milkman, Exec. Director
Tel: (703) 603-7740
Fax: (703) 412-7113

Federal Procurement Data Center
7th & D St., - Rm. 5652
Washington , DC 20407
Linda Hornsby, Director
WOBREP: Brenda Johnson
Tel: (202) 401-1529

House Small Business Committee
Rayburn Bldg. - Rm. 2361
Washington, DC 20515-6315
Tom Powers, Counsel
Tel: (202) 225-5821

International Franchise Association
1350 New York Ave., NW,, Suite 900
Washington, DC 20037
Terrain Barnes-Bryan, V.P.
Research/Minority/Women Affairs
Tel: 202/628-8000

Minority Business Development Agency
U.S. Department of Commerce
14th & Constitution Ave., NW, Rm. H5055
Washington, DC 20230
Director: Gilbert Colon
Tel: (202) 482-5061
Fax: (202) 482-2693

National Minority Supplier
Development Council
15 West 39th Street, 9th Floor
New York, New York 10018
Steven Sims (V.P)
Tel: (212) 944-2430
Fax: (212) 719-9611

Office of Federal Procurement Policy
725 17th Street, NW,
Room 9001-NEOB
Washington, DC 20503
Robert M. Cooper, Deputy Associate
Administrator For Policy
Tel: (202) 395-4545
Fax: (202) 395-5105

Senate Small Business Committee
Russell Office Bldg., Room 428A
Washington, DC 20510
Bill Montalto, Counsel
Tel: 202/224-5175

Small Business Administration
PO Box 34500
Washington, DC 20043-4200
Director: Wilfredo J. Gonzalez
Washington District Office
Tel: (202) 606-4000 ext. 200
Fax: (202) 606-4200

Small Business Administration
409 3rd St., SW,, 6th Floor
Washington, DC 20416
Assistant Administrator: Betsy Myers
Office of Women's Business Ownership
Tel: (202) 205-6673

Small Business Administration
409 Third Street, SW,
Washington, DC 20416
Robert Niel, Deputy Associate
Deputy Jane Butler
Tel: (202) 205-6410
Fax: (202) 205-7549

Small Business Administration
409 Third Street, SW,
Washington, DC 20416
Thomas A. Dumaresq, Associate
Administrator/Procurement Assistance
Tel: 202/205-6465
Fax: 202/205-7324

U.S. Chamber of Commerce
1615 H Street, NW,
Washington, DC 20062
David Voight, Associate
Director, Small Business Center
Tel: 202/463-5503

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PROCUREMENT AND SMALL BUSINESS OFFICES

DEPTMENTAL OFFICE

OFFICE OF PROCUREMENT (OPO)
Procurement Operations Division
14th & Constitution Ave., N.W. H6516
Washington, DC 20230
Chief: 202/482-4185
Sm. Bus.: 202/482-1472
Sm. Pur.: 202/482-5555
FAX: 202/482-4988

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

SYSTEMS PROGRAM OFFICE (SPO)
Procurement Staff
1315 East-West Highway
Room 9626 - Code SPOX2
Silver Spring, MD 20910
Director: 301/713-3478
Sm. Bus.: 301/713-3478
FAX: 301/713-4155

SYSTEMS PROGRAM OFFICE (FRAM)
Fleet Replacement and Modenzation
Contracts Office Ste. 2010
2611 Jefferson Davis Hwy
Arlington VA. 22202
TEL: 703/602-9049
FAX: 703/602-9051

PROCUREMENT, GRANTS & ADMINISTRATIVE SERVICES (PGAS)
Procurement Operations Division
1325 East-West Highway
Room 4301 - Code OA-31
Silver Spring, MD 20910
Chief: 301/713-0820
Sm. Bus.: 301/713-0847
Sm. Pur.: 301/713-0806
FAX: 301/713-0806

EASTERN ADMINISTRATIVE SUPPORT CENTER (EASC)
Procurement Division, EC3
253 Monticello Ave., Room 303
Norfolk, VA 23510
Chief: 804/441-6893
Sm. Bus.: 804/441-6893
Sm. Pur.: 804/441-6886
FAX: 804/441-3786

CENTRAL ADMINSTRATIVE SUPPORT CENTER (CASC)
Procurement Division, CC3
601 E 12th ST., Room 1756
Kansas City, MO 64106
Chief: 816/426-7805
Sm. Bus.: 816/426-7267
Sm. Pur.: 816/426-7129
FAX: 816/426-7530

MOUNTAIN ADMINISTRATIVE SUPPORT CENTER (MASC)
Procurement Division, MC3
325 Broadway, Room 5559
Boulder, CO 80303-3328
Chief: 303/497-3515
Sm. Bus.: 303/497-5133
Sm. Pur.: 303/497-5893
FAX: 303/497-3163

NATIONAL DATA BUOY CENTER (NDBC)
Program Support Division
Building 1100, Room 360B
Stennis Space Center MS 39529-6000
Chief: 601/688-1701
Sm. Bus.: 601/688-1705
Sm. Pur.: 601/688-1705
FAX: 601/688-3153

WESTERN ADMINSTRATIVE SUPPORT CENTER (WASC)
Procurement Division, WC3
7600 Sand Point Way, N.E.
Seattle, WA 98115-0070
Chief: 206/526-6028
FAX: 206/526-6025

THE BUREAU OF CENSUS

PROCUREMENT OFFICE (CENSUS)
Federal Office Building #3
Room 1551
Suitland, MD 20233
Chief: 301/763-4550
Sm. Bus.: 301/763-1954
Sm. Pur.: 301/763-2622
Fax: 301/763-1806

PROCUREMENT OFFICE (JVILLE)
1201 E. 10th Street
Jeffersonville, IN 47132
Director: 812/288-3351
Sm. Bus.: 812/288-3351
Sm. Pur.: 812/288-3351
FAX: 812/288-3937

PATENT AND TRADEMARK

OFFICE OF PROCUREMENT (PTO)
2011 Crystal Drive
Crystal Park #1,Suite 810
Arlington, VA 22202
Chief: 703/305-8014
Sm. Bus.: 703/305-8152
Sm. Pur.: 703/305-8370
FAX: 703/305-8294

AUTOMATED PATENT SYSTEM CONTRACTS (APS)
2231 Crystal Drive
Crystal Park #3,Rm. 784
Arlington, VA 22202
Chief: 703/305-4176
FAX: 703/305-4190

TECHNOLOGY ADMINISTRATION

NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY (NIST)
Acquisition & Assistance Division
Quince Orchard & Hwy 270
Building 301, Room B-128
Gaithersburg, MD 20899
Director: 301/975-6350
Sm. Bus.: 301/975-6343
Sm. Pur.: 301/975-6302
FAX: 301/963-7732

ADVANCED TECHNOLOGY PROGRAM (ATP)
A402 Admin. Bldg.-NIST
Gaithersburg, MD 20899-0001
Tel: 1-800/ATP-FUND
301/975-5187
FAX: 301/926-9524

NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)
Contracting Service Division
Forbes Building, Room 203A
5285 Port Royal Rd
Springfield, VA 22161
Sm. Bus.: 202/482-1472
Sm. Pur.: 703/487-4720
FAX: 703/487-4006

SMALL BUSINESS OFFICES

OFFICE OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION
14th & Constitution Ave., N.W. H6411
Washington, DC 20230
Director: 202/482-3387
Sm. Bus.: 202/482-5614
Women Bus.: 202/482-1472
FAX: 202/482-0501

SMALL BUSINESS INNOVATION RESEARCH
1315 East-West Highway
SSMC3 Station 15342 Code CS/RT
Silver Springs, MD 20910
Joeseph M. Bishop, Program Manager
Tel: 301/713-3565
FAX: 301/713-4100

WHAT IS NAUNET?

NAUNet is a distance-learning network. It uses highly efficient telecommunications to connect specially equipped classrooms at great distances apart.

WHERE?

NAUNet's classrooms are on the campuses of Northern Arizona University, ten community colleges, and five rural school districts at strategic locations across Arizona. The network also extends to special rooms at NAU's sister universities, the University of Arizona College of Medicine, an urban school district, and two state agencies.

HOW?

NAUNet uses two-way television — on large screens and very clear — for "face-to-face" teaching and learning in several places at the same time. Besides live and interactive television, several learning media are used — films, compact discs, computer software, CD-ROMS, document cameras, laser discs — to supplement and enhance instruction.

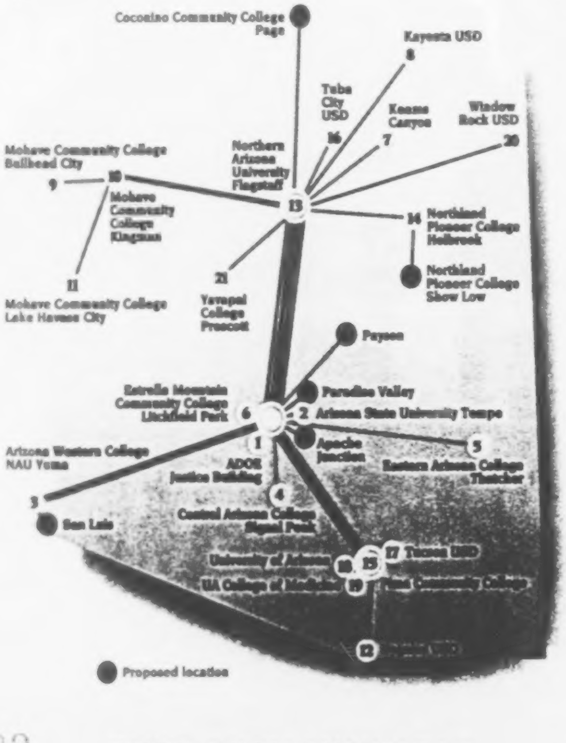
THE PURPOSE OF NAUNET

Northern Arizona University is charged by the Arizona Board of Regents to deliver quality upper-division courses and undergraduate programs to all rural and, where specifically authorized, metropolitan counties, and to provide graduate education programs throughout the state. NAUNet is a tool to help carry out this statewide charge. NAUNet is a cost-effective way to deliver quality instruction from the residential campus in Flagstaff to sites throughout the state. At some sites, NAUNet supplements instruction delivered by on-site faculty. At other sites, NAUNet is the primary means by which instruction is delivered.

In addition, NAUNet is the backbone of the NAU-Community College Arizona Partnership Plan. NAU is working in partnership with Arizona community colleges to deliver fully-articulated degree programs using on-site faculty and the interactive instructional television made possible by NAUNet.

PROPOSED EXPANSION OF NAUNET

Six additional Arizona Partnership Plan sites are illustrated in blue.


Coconino Community College Page
Kayenta USD
8
Tuba City USD
16
Kayenta Canyon
7
Window Rock USD
20
Mohave Community College Bullhead City
9
10
Mohave Community College Kingman
Northern Arizona University Flagstaff
13
14
Northland Pioneer College Holbrook
Northland Pioneer College Show Low
11
Mohave Community College Lake Havasu City
21
Yavapai College Prescott
Payson
Paradise Valley
Estrella Mountain Community College Litchfield Park
6
2
Arizona State University Tempe
1
Apache Junction
5
Eastern Arizona College Thatcher
Arizona Western College NAU Yuma
ADOE Justice Building
4
3
San Luis
Central Arizona College Signal Peak
17
Tucson USD
University of Arizona
18
15
UA College of Medicine
19
Pima Community College
12
Proposed location

Northern Arizona University is an Equal Opportunity/Affirmative Action Institution 10/95/ESP/1M

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NAUNET SITES AND CONTACTS

(match numbers with map on last page for site locations)

1 **Arizona Department of Education**
Justice Building
Sandra Williams
Arizona State Courts Building
Room 211
(602) 542-3718

2 **Arizona State University**
Tempe Campus
Distance-Learning
Technology
Betty Craft
(602) 965-6738
Master Control
Roger Carter
(602) 965-7661

3 **Arizona Western College**
NAU-Yuma
Associate Director
Paul Dale
(520) 344-3828
NAUNet Operator
Zeke Torres
Room 201
Bus. Admin. Building
(520) 344-3828

4 **Central Arizona College**
Signal Peak Campus
Statewide Coordinator
Brenda Sutton
(520) 723-4141
NAUNet Operator
John Kline
Room 326 Building 300
(520) 421-9129

5 **Eastern Arizona College**
Thatcher Campus
Statewide Coordinator
Edward Hubbard
(520) 428-8344
NAUNet Operator
Nelda Potter
Room 8, Tech Building
(520) 348-9542

6 **Estrella Mountain Community College**
Litchfield Park
Statewide Coordinator
Bill Padilla
(602) 935-8868
NAUNet Operator
Eleyna Leyva
Room 110
Estrella Building
(602) 935-1848

7 **Hopi High School**
Keams Canyon
Statewide Coordinator
Theresa Boone
(520) 523-6927
NAUNet Operator
Burton McKerchie
B 110
(520) 738-5117

8 **Kayenta Unified School District #27**
Kayenta High School
Statewide Coordinator
Theresa Boone
(520) 523-6927
NAUNet Operator
Sylvia Hearne
Room 17
(520) 697-8312

9 **Mohave Community College**
Bullhead City Campus
Statewide Coordinator
Paul Tribbett
(520) 757-0818
NAUNet Operator
(opens August '96)

10 **Mohave Community College**
Kingman
Statewide Coordinator
Paul Tribbett
(520) 757-0818
NAUNet Operator
Angela Maynard
Room 1103 Building 1100
(520) 692-7955

11 **Mohave Community College**
Lake Havasu City Campus
Statewide Coordinator
Mary Turner
(520) 855-7812
NAUNet Operator
Layne Montgomery
Room 222 Main Building
(520) 453-7350

12 **Nogales Unified School District #1**
Administration Building
Statewide Coordinator
Paul Denham
(520) 364-8085
NAUNet Operator
(opens August '96)

13 **Northern Arizona University**
Flagstaff Campus
Statewide Coordinator
Janet Carlson
(520) 523-6608
NAUNet Manager
Dawn Lewis
Room 133
Communications
Building
(520) 523-9402

14 **Northland Pioneer College**
Holbrook Campus
Statewide Coordinator
Charlie Little
(520) 367-1152
NAUNet Operator
Cliff Towers
NAU Room
(520) 524-3723

15 **Pima Community College**
Community Campus
Statewide Coordinator
David Kennon
(520) 323-3191
NAUNet Operator
(opens January '97)
C-112 Telecom Wing

16 **Tuba City Unified School District #15**
Tuba City High School
Statewide Coordinator
Theresa Boone
(520) 523-6927
NAUNet Operator
Freddie Honhongva
Room 113
(520) 283-4246

17 **Tucson Unified School District #1**
Video Communications Building
Donna Flenner
2025 E. Winsett
(520) 617-7041

18 **University of Arizona**
Harvill Hall
Abbie Davison
(520) 621-4696

19 **UA College of Medicine**
Health Sciences
Center
Biomedical
Communications
Janet Major
(520) 626-7343

20 **Window Rock Unified School District #8**
Ft. Defiance High School
Statewide Coordinator
Theresa Booth
(520) 523-6927
NAUNet Operator
(opens April '96)

21 **Yavapai College**
Prescott Campus
Statewide Coordinator
Kay Dean
NAUNet Operator
Tom Thorson
Room 249 Building 3
(520) 523-0089

Central Florida Consortium of Higher Education

Greater Orlando Resources and Links

- ★ City of Orlando
  Information about the city
- ★ City of Orlando
  Information about the City of Orlando including a photo of mayor Glenda Hood
- ★ Welcome to the City of Orlando
  An overview of the city with information of accommodations, attractions, the business directory etc.
- ★ Greater Orlando Overview
  Another overview of the City of Orlando

Central Florida/Orange County

- ★ Orange County Public Schools -- Orlando
  This page has basic Internet information, school district information, technical support and educational resources especially for the K-12 educator
- ★ Central Florida on the Web
  This site, also by Orange County Public Schools also has links to areas of local interest such as Arts and Sciences, Clubs, Libraries, Socail Services, TV and Radio Stations, Tourist Information, Weather, City and County Governments, Private Schoo ls, School Boards and Businesses around Central Florida... to name a few!

Our Team!

- ★ Orlando Magic!
  The Orlanso Magic's homepage with the National Basketball Association

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Updated February 23, 1996 B. Truman

Welcome

Central Florida Consortium of Higher Education

A strategic partnership for education within the Central Florida region.

Leadership

- Board of Directors
- Steering Committee

Institutions

The Central Florida Consortium of Higher Education is made up of the following:

- University of Central Florida
  A metropolitan university of 26,000 students located in East Orlando
- Brevard Community College
  Located in Brevard County, Florida
- Central Florida Community College
  Located in Ocala, Florida
- Daytona Beach Community College
  Located in Daytona Beach, Florida
- Lake-Sumter Community College
  Located in Leesburg, Florida
- Seminole Community College
  Located in Sanford, Florida
- Valencia Community College
  Located in Orlando, Florida

History

The Consortium has existed since 1988, and has operated with varying degrees of funding and activity. Currently there are four subcommittees.

They are:

- Distance Learning
- Math

Central Florida Consortium of Higher Education

Distance Learning Demonstration Project

★Distance Learning Resources (Links)

Background

About the Project
- Kickoff Meeting Notes March 8, 1995
- Alphabetical Listing of all Participants

Advisory Committees/Meeting Notes

Faculty Development Advisory Committee
- Participant List
- Objectives
- Meeting Notes May 31, 1995
- Meeting Notes July 10, 1995
- Meeting Notes August 29, 1995
- Meeting Notes September 19, 1995
- Meeting Notes October 31, 1995

Instructional Technologists
- Objectives
- Participants
- Meeting Notes December 4, 1995

- Science
- Professional Development Network

Current Projects

The Consortium's newest project is the Distance Learning Demonstration Project, an $800,000 grant from the State of Florida to promote faculty development, create a survey course and provide learner support.

For more references on distance learning around the world, check out these
★ Distance Learning Resources

Other Educational Institutions

American Universities
This is an indexed listing to Web pages of Colleges and Universities within the United States

U.S. Community Colleges
This a listing of Community Colleges in the Unites States that have Web pages

Peterson's Education Center
This is the on-line directory of Peterson's Guide to Education

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For more information about the Consortium or the Distance Learning Demonstration Project. please send e-mail to cfche@pegasus.cc.ucf.edu or to send us a note right now click here.

Executive Director Dr. Steven E. Sorg 407/823-5060 Suncom 345-5060, Director Dr. Lucy Morse 407/823-6564 Suncom 345-6564. Our office is located in the UCF College of Education Room 179. Our FAX number is 407/823-6029.

Updated February 23, 1996 B. Truman

Learner Support Advisory Committee

- Participants List
- Objectives
- Meeting Notes May 15, 1995
- Meeting Notes June 14, 1995
- Meeting Notes July 20, 1995
- Meeting Notes September 7, 1995
- Meeting Notes October 27, 1995

Production Teams

- Participants List

Survey Course Advisory Committee

- Participants
- Objectives
- Meeting Notes April 18, 1995
- Meeting Notes May 31, 1995
- Meeting Notes July 10, 1995
- Meeting Notes August 29, 1995
- Meeting Notes October 29, 1995
- Meeting Notes December 13, 1995

Upcoming Events

- Faculty Development Workshops
- Instructional Technology Workshops
- Committee Meetings
- Learner Support Seminar (March 1995)
- Teleconferences (also available on video)

Central Florida Consortium of Higher Education

Resources for Learning About Distance Education

Last updated February 26, 1996 B. Truman

General Education

- United States Department of Education
  This is the homepage of the United States Department of Education located in Washington DC. Links include Guides for teachers, funding opportunities, contacts, publications and links to other resources
- Educom
  This is the Web site of the distributors of the electronic newsletter, Edupage and Educom Review. It represents a Consortium of educational institutions committed to transforming education through technology
- ERIC On-Line Clearinghouse
  This site is the same ERIC as in libraries, Educational Resources Information Center. Links include those to other gopher and Web sites, AskERIC, National Parent Information Network and the National Library of Information
- FIRN Florida Education Resource Network
  This site is the homepage for the E-mail network constructed and used in Florida specifically for teachers. This site also has links to the Florida Department of Education, instructional resources and info on State and Federal government
- Florida Educator's Cyberspace Navigator
  This site is produced by a joint effort between the Florida Statewide Systemic Initiative (SSI) and the Florida Information Resource Network (FIRN). It has great links to Florida Government information
-

Distance Learning

- Alphabetical Index to Distance Education Clearinghouse
  This site has an index where you can click on to get to the definition list. Excellent resource.
- American Center for Study of Distance Education
  This site is from The Pennsylvania State University. It also has info on the American Journal of Distance Education edited by Michael Moore.
- International Center for Distance Learning
  This site has publications from around the world on distance learning
- Distance Education Clearing House
  This site is produced by the University of Wisconsin and has one of the best all around sites for distance learning. Further down on this page is the link to the 12th Annual Conference to be held in August.
- United States Distance Learning Association
  This site is has valuable information on distance learning practices and policy. I also has research information and statistics
- Distance Learning Directory
  This site has five pages of links! It is maintained by Howard University's Continuing Education Program. Links include general sites as well as sites for adult education, K-12, electronic classrooms, global distance learning centers, video, audi o and research sites

- PBS On-Line
  This rich site contains information on PBS courses and television programs
- Distance Learning Laboratory
  This site is also from Howard University and describes the major components of the Internet Access Project
- Department of Defense Voluntary Education
  This site has good information about courses that the military offers for all the armed services. Plus it has a link to DANTES-Defence Activity for Non-Traditional Education Support
- AT&T Center for Distance Education
  Here is a recommended link to a major corporation using distance education
- More Resources for Distance Education
  Here is yet another site full of distant learning links from the Capital Community Technical College. It has some links to classes, associations and topics such as intellectual property

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Distance Learning and the Web

- World Lecture Hall
  This site is from the University of Texas and lists specific class information from around the world grouped by subject matter
- The Web and Instruction
  This site, from the University of Massachusetts at Dartmouth has links to distance education resources and examples of course delivery on the Web
-

Open Universities

- Distance Education Resource Page
  This site is from the Open University of British Columbia and has great links to associations, educational institutions and resource pages
-
-

On-Line Publications

- On-Line Interactive Age Newspaper
  You can take a virtual tour, either automated or point and click at this site. This is also a good example of the use of Macromedia's shockwave add-on application for Web browsers
- Electronic School
  This publications comes from the National School Board Association

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Techie Stuff/Hardware & Software

- Digital Video
  This page has information on what digital video is: definitions, MPEG, QuickTime and making it happen with ISDN, ATM and T1 information
- Glossaries of the Distance Education Clearinghouse
  This site has a list of glossaries for telecommunications, teleconferencing, videoconferencing and Satellingo, or how to "talk Satellite"

- Compressed Video from the Distance Education Clearinghouse
  This is a short and sweet explanation of compressed video
-

Funding Sources

- Funding Sources from the Distance Education Clearinghouse
  This site has some good links to corporate and nonprofit sites
- SPIN Webpage
  This site has great links to Federal information for grants

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Professional Opportunities/Conferences

- 12th Annual Distance Learning Conference
  This site has information about the conference put on by the University of Wisconsin on Distance Teaching and Learning
- American Association of Community Colleges
  This is a leading national association for community colleges which has links to conference information, geovernment relations info, communications, education resources

COURSE DESCRIPTIONS

Electronic Commerce and EDI Basics – You will learn how to quickly implement EDI by following the easy steps we provide in this complete one day program. You will also learn about the use of EDI on the Internet, as well as other Electronic Commerce technologies such as E-Mail and Electronic Funds Transfer (EFT). A must for people new to EDI and experienced EDI Managers looking to expand their programs.

Standards, Mapping and Integration – Learn how to integrate EDI into business systems using guidelines based on our real world, hands-on experience in EDI systems integration. This one day program for more experienced users will also cover the impact of current standards versions and revisions.

"I thought the course was very informative, well planned and presented. I haven't been doing EDI very long and it was a very good introduction."
Mary-Beth Jourdan – Sony Electronics
Attended "EDI For First Time Users" and "Standards, Mapping & Integration"

EDI For Coordinators – Project teams, EDI Managers and MIS personnel will all benefit from this one day course which focuses on important components of EDI implementation. This course assumes a knowledge of EDI basics and is designed to provide a working knowledge about trading partner rollout, daily EDI operations, putting together implementation guidelines, and the evolution of EC/EDI. *Plus, a new module has been added covering the realities of EDI over the Internet.*

Healthcare EDI – Designed to give healthcare provider management an understanding of the driving forces for using EDI; the benefits and the investment required; the application of EDI in admitting, patient billing, claims payment, and materials management; and the impact EDI will have on existing application systems.

Advanced Manufacturing EDI – This program addresses the use of EDI to re-engineer business processes. It covers how to organize and rollout Quick Response, JIT and VMI initiatives. The use of the 856 advanced ship notice integrated with bar coding will be covered in detail along with how to use the 830, 862 and 866.

Corporate Financial EDI & EFT – To maximize the benefits of EDI, electronic payments and funds transfer should be implemented to create a closed-loop business process. This one day program covers financial processes such as Evaluated Receipt Settlement (ERS) in which EDI is a required foundation, and control and security issues, critical to Financial EDI and EFT, are discussed.

EDI in Transportation & Distribution – Modern transportation, distribution, and warehousing systems demand the use of EDI to fulfill the requirements of business processes like Quick Response, VMI, and Supply Chain Management. This course explains how EDI is integrated and used by carriers, shippers, brokers, and receivers to rapidly exchange information.

"This was a great program. I would advise anyone in the EDI field to take this class."
Jeff Stouffer, Transportation Specialist – Helene Curtis
Attended "EDI in Transportation & Distribution"

Financial EDI For Banks – Today's banks are faced with the need to re-engineer their business processes in order to stay competitive. This full day course will outline how EDI and EFT are changing traditional banking processes by focusing on the impact of EDI on financial systems; legal, audit, and security control issues including UCC 4A requirements; trends in financial EDI and marketing financial EDI as a tie-in to other cash management products.

ON-SITE EDUCATIONAL PROGRAMS

Our on-site education programs have been used by many large organizations to provide employees, customers, and trading partners, with high quality EC/EDI education at a fraction of the cost to develop the programs internally. The core curriculum of courses offered in the EC/EDI Education Centers provides a broad set of topics which can be tailored into a single or multiple day on-site program.

Many companies have combined two or more of our existing classes to create more intensive, customized programs based on specific learning objectives and attendee profiles. We can also customize our programs to incorporate a company's specific EC/EDI usage and corporate strategy.

About The APL Group

Our expertise in EDI results from over a decade of hands-on experience gained through hundreds of EDI implementations. Our highly qualified teaching staff have been EDI Managers, are active participants in EDI standards development, and have been functional managers and executives who have successfully used EDI to re-engineer business processes in the field.

Visit our web site at http://www.aplgroup.com for expanded course syllabi and information about APL Group's EDI software, consulting and systems integration services.

APPENDIX B

Sustaining Learning Communities Newsletters

Winter Quarter, 1996

Electronic classrooms were conducted for advisees working on dissertations during winter quarter 1996. Ecrs were supplemented by newsletters sent in advance and also distributed to professionals enrolled in Human Resources Development in a Western Pennsylvania Cluster. Newsletters containsw a great deal of information about Pennsylvania.

Memo Early Jan
- "Third Wave" Human Resources Development Systems
- National Information Infrastructure Initiative
- Cognitive Sciences and Comunication Systems
- Rethinking for Restructuring and Revitalizing
- The Pacific Century
- Keystone States of Heart and Mind
- Major Applied Research Projects

ECR Jan 7, 1996

Memo Late Jan
- Most of the above-mentioned topics were followed

ECR Jan 21, 1996

Memo Early Feb

ECR Feb 4, 1996

Memo Late Feb

ECR Feb 18, 1996

Memo Early Mar

ECR Mar 3, 1996

ECR Mar 17, 1996

* * * * * * * * *

VISION

"By the year 2000, American colleges and universities will be lean and mean, service oriented and science minded, multicultural, and increasingly diverse -- if they intend to survive their fiscal agony."

John Elson. "Campus of the Future."
Time, v. 139, n. 15 April 13, 1992.

SUSTAINING LEARNING COMMUNITIES

Vol. 2. No. 1. January 1996

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HUMAN RESOURCES DEVELOPMENT

> It is those populations with well trained and well educated citizenry that will transact, exchange, fashion, and construct the commerce of the world.
>
> Robert B. Reich, *The Work of Nations: Preparing Ourselves for 21st Century Capitalism*. New York: Knopf, 1992.

* * * * * * * * * *

"'Third Wave' Human Resources Development (HRD) Systems"

During the Industrial Era of the 1950s and 1960s, society depended upon education to prepare the intellectual capital and trained workforces for the workplaces dominated by labor intensive heavy manufacturing. Education at all levels was essentially in an **Expansion Era** to provide access to achieve more equality of opportunity. During one year in the 1950s, one new two-year college was created each week.

The Postindustrial Era of the 1970s and 1980s was a period of modernization for the private sector, adjusting to wave after wave of contemporary technology that changed skill requirements. Education lagged behind the private sector during the **Modernization Era**. Program formats were out of synchronization with workplace needs. The private sector began to allocate big sums of money to training that led to corporate colleges with undergraduate and graduate degrees (*Corporate Classrooms*, The Carnegie Foundation, 1985).

The Early Technical Era has given us a glimpse of what lies ahead. **Sustaining Learning Communities** is an opportunity to experience **"New Habits of Heart and Mind"** that we must develop to create next generation learning paradigms that will yield the **Knowledge Workers of the Future**.

What policies should the U.S. pursue to deal with issues of equality of access to high quality programs and services at a reasonable cost in education or health and human services? How do we "Rethink to Restructure and Revitalize" education to evolve into an anytime anywhere distance education paradigm? What are the implications for MISSION priorities and primary program content and content formats, delivery system formats and learning outcomes evaluation formats? How do we deal with Enrollment Management when learners have access to programs through 100,000++ channels via World Wide Web? How could we co-create learning support utilities?

Cognitive Sciences and Communications Systems

Entirely new world class Human Resources Development systems are emerging. The new systems are based on basic research on the cognitive sciences, how the brain and mind function, and on communications systems, databases and networks.

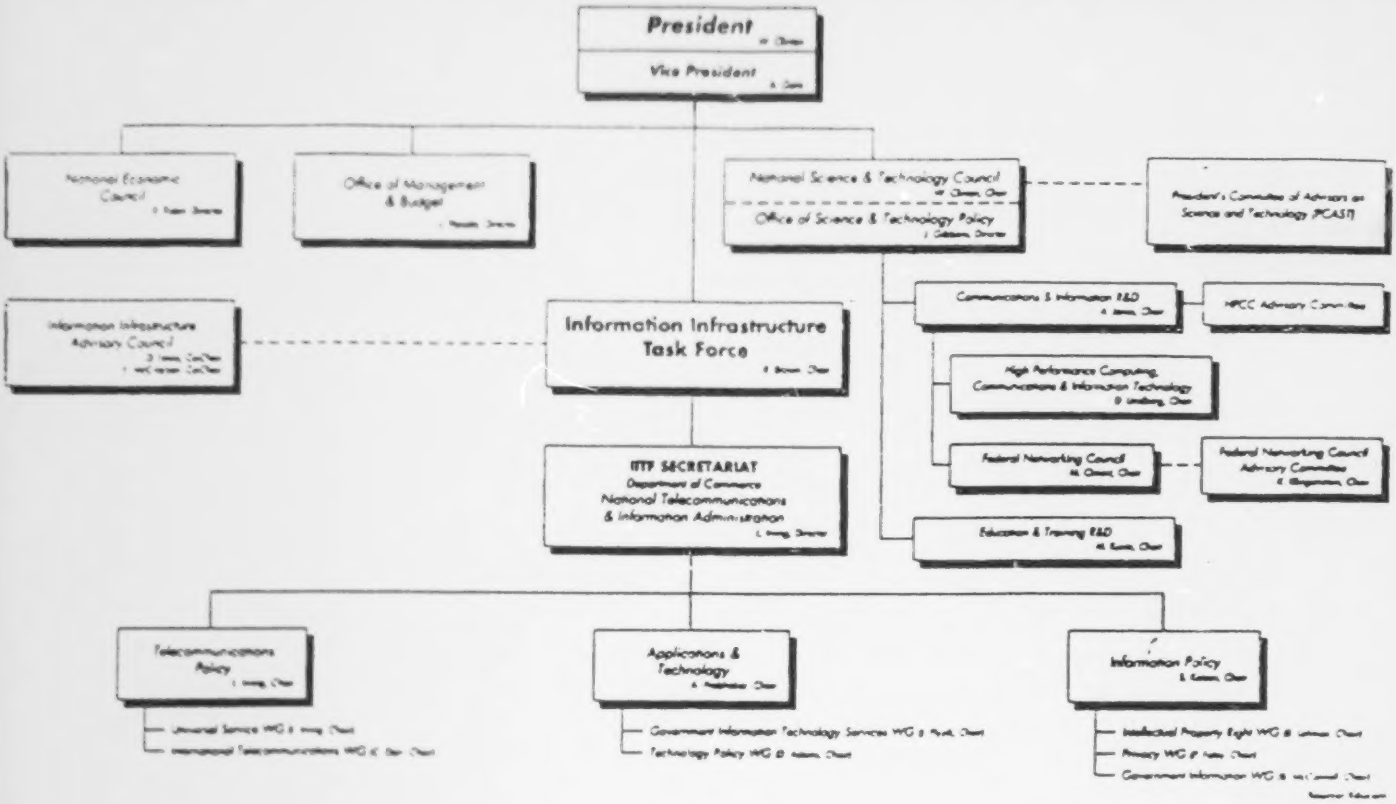
Cognitive Sciences: Mind

Research in the **cognitive sciences** will play a major role in re-engineering education. This includes research about learning styles and what is learned through technology such as magnetic resonance imaging (MRI). Scientists can now peer into the human brain through MRI and observe changes that occur as the brain works. Imagine being able to observe cognitive synapses while a human is engaged in the **inputting, processing, and outputting** of information as in the integration of math, science, and technology to solve problems. Brain-actuated control has been developed in several labs across the world. Electrodes attached to the head key in on brain waves and monitor them for voltage changes that are then interpreted as computer commands: people have turned lights and TVs on and off, operated typewriters, and moved cursors across video screens. (Jerry Shine, "Mind Games," Sky, (23) 10, Oct. 1994, 120+. Sharon Begley with Andrew Murr and Adam Rogers, "Gray Matters," Newsweek (CXXV) 13, March 27, 1995, pp. 48-54. Michael D. Lemonick, "Glimpses," Time (146) 3, July 17, 1995, pp 44+. Joel L. Swerdlow, "Quiet Miracles of the Brain," National Geographic (187) 6, June 1995, 2-41).

Communications Systems: Databases and Networks

The United States National Information Infrastructure (NII) initiative has accelerated. Vice President Gore is chairing the initiative on Making Government Work: The Electronic Delivery of Federal Services (1993). Commerce Secretary Brown chairs the Information Infrastructure Task Force Committee on Applications and Technology which produced Putting the Information Infrastructure to Work (1994) that addresses manufacturing, commerce, health care, learning, environment, libraries, and government service delivery. The Federal Quality Institute provides access to numerous total quality documents through its Information Network (1993). The Office of Science and Technology Policy of the Executive Office of the President has focused activities on a "Societal Learning System" (ED 383 040). The Advanced Technology Program has funded 70 projects for development and application of software and information technology. What are the implications for raising the level of awareness about science and technology? How do we envision Internet and WWW evolving as noted in Internet World, Nov., 1995? What are the implications for **RETHINKING** for RESTRUCTURING?

ORGANIZATION OF U.S. NATIONAL INFORMATION INFRASTRUCTURE INITIATIVE


President
Vice President
National Economic Council
Office of Management & Budget
National Science & Technology Council
Office of Science & Technology Policy
President's Committee of Advisors on Science and Technology (PCAST)
Information Infrastructure Advisory Council
Information Infrastructure Task Force
Communications & Information R&D
HPCC Advisory Committee
High Performance Computing, Communications & Information Technology
Federal Networking Council
Federal Networking Council Advisory Committee
Education & Training R&D
IITF SECRETARIAT
Department of Commerce
National Telecommunications & Information Administration
Telecommunications Policy
Applications & Technology
Information Policy
Universal Service WG
International Telecommunications WG
Government Information Technology Services WG
Technology Policy WG
Intellectual Property Rights WG
Privacy WG
Government Information WG

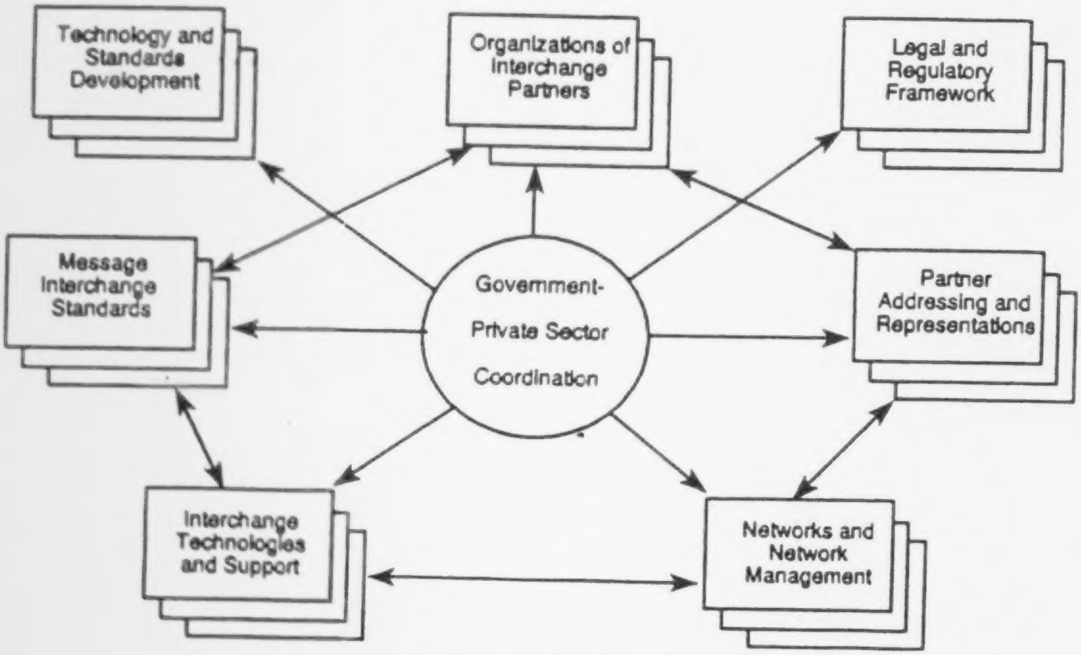

Technology and Standards Development
Organizations of Interchange Partners
Legal and Regulatory Framework
Message Interchange Standards
Government-Private Sector Coordination
Partner Addressing and Representations
Interchange Technologies and Support
Networks and Network Management

Figure 1. Planning for Global Electronic Commerce.

Rethinking for Restructuring and Revitalizing

Scholars predict the twenty-first century will be known as the "Pacific Century." China has 22% of the world's population. Dr. Yng-chien Sheu's strategic plan for the Graphic Arts & Printing Technology Department in Taipei, Taiwan, is a support document for six Asian-Pacific Centers:

1. Cargo transfer center in Kaohsiung.
2. Finance center in Taichung.
3. Manufacturing center in Yunglin.
4. Air transportation center in Taoyuan.
5. Communication center in Taipei, and
6. Media center (printing and video) in Taipei.

How can education support economic development priorities?

In addition to China, India, Mexico, Indonesia, Russia, Czech Republic, and Slovakia are key growth areas. The U.S. Department of Commerce estimates that nearly 75% of world trade growth in the next 20 years will happen in these "big emerging markets" (BEMs). Their share of world imports could exceed Europe and Japan combined by 2010. What are the curriculum implications for electronic commerce?

A southeast corridor is emerging rapidly that extends from the Greater Washington Area to Texas, core of the North American Free Trade Agreement. States have developed plans such as TECH 2000 STRATEGIC PLAN in South Carolina (1994) and Restructuring Plan in Virginia (1994). States in the corridor are members of The Southern Technology Council. Several states have created blue-ribbon panels to recommend how governmental programs and services could be restructured to be more competitive, primarily with technology.

Several states initiated state-wide technology education projects such as Iowa in 1989, Georgia in 1992, Maryland in 1993, Kentucky in 1993, and North Carolina in 1993. On Oct. 4, 1995, Brevard Community College offered the first five courses for the World Community College (WCC), an agreement between the 70 Community Colleges for International Development (CCID) and the Electronic University Network. Then, 11 of 18 members of the Western Governor's Association agreed to explore the creation of a "virtual university." (The Chronicle of Higher Education, Dec. 15, 1995, pp. A19).

Several quotes from previous memos are worth repeating. Gordon Moore, founder of Intel, stated

> "By the year 2000, you'll be talking to your computer. And it will probably respond - in 50 languages."
> (Lenzer, R. (Sept. 11, 1995, Forbes (156)6, 167-8).

"An historical analogue would be the Industrial Revolution, but compressed into 15 years - not played out over a century. Hang on - this will be quite a ride."
(Kraemer, J. S. (1994). The Realities of Convergence. Arlington, VA: EDS Management Consultant Services).

PACIFIC RIM
MONGOLIA
CHINA
NORTH KOREA
JAPAN
SOUTH KOREA
LAOS
HONG KONG
TAIWAN
THAILAND
CAMBODIA
VIETNAM
800 miles
BRUNEI
MALAYSIA
SINGAPORE
INDONESIA
INDONESIA

LEADERSHIP FOR A DEMOCRATIC SOCIETY RELATIVE TO PACIFIC RIM COUNTRIES

	20TH CENTURY	21ST CENTURY
CHINA		
JAPAN		
S. KOREA		
TAIWAN		
SEAMEO COUNTRIES		

Strategic Plans for Systems Development

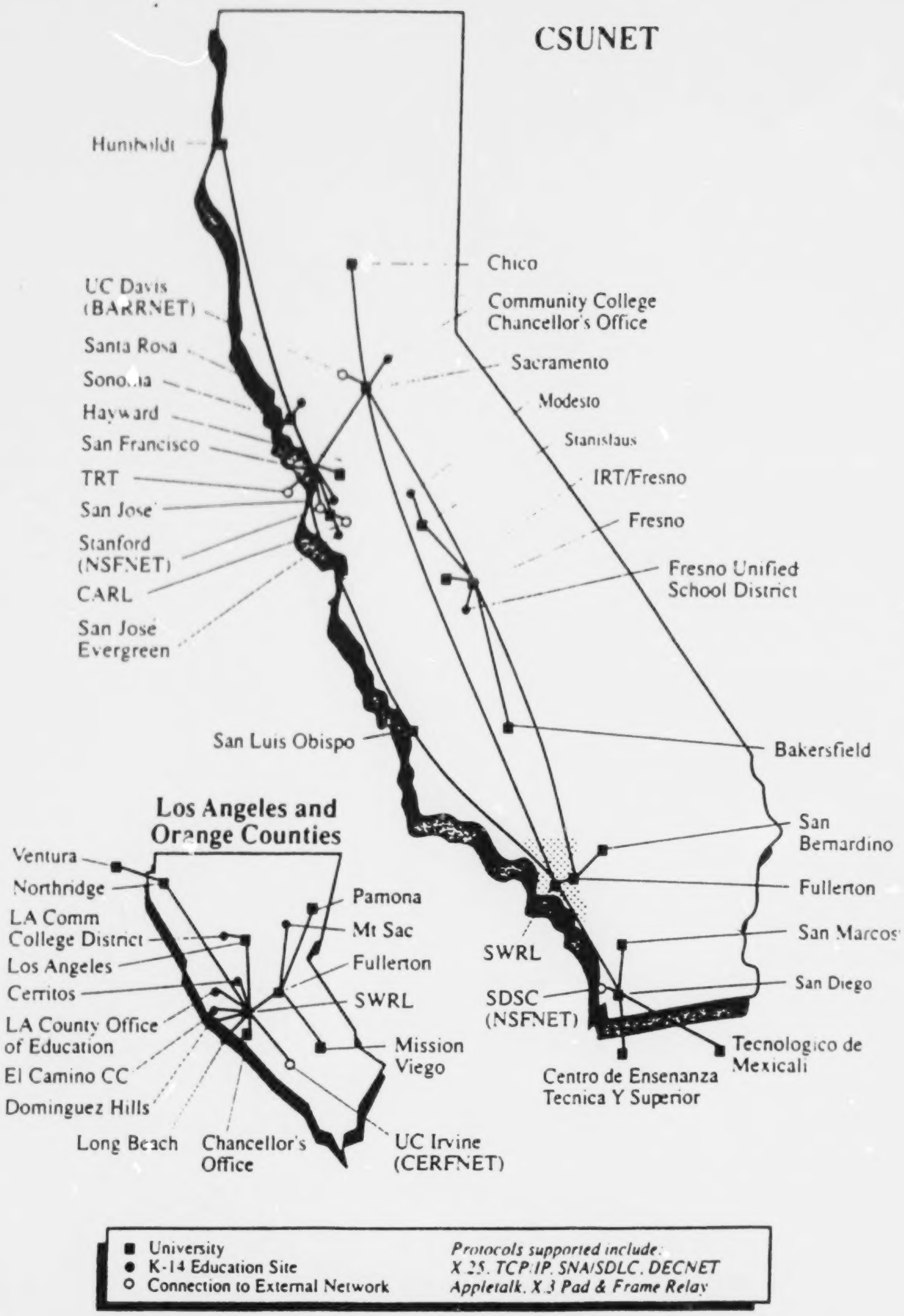
The California Master Plan in 1960 created a tripartite system of postsecondary education consisting of The California Community Colleges with 100+ campuses. The California State University system with 20 campuses, and The University of California with nine campuses. A Commission for the Review of the Master Plan for Higher Education published The Challenge of Change: A Reassessment of the California Community Colleges (1986). The Challenge of Change was followed by a series of reports leading to Choosing the Future (1993). Choosing calls for **Human Resources Development** and use of **technology** (ED 372-239).

Access to Academic Excellence for the New Millennium by the University of Georgia System (1994) will benefit from nearly $600 million in new money from the lottery and Governor Zell Miller's HOPE scholarship program that pays full tuition for high school graduates who enter college and maintain a 3.0 average. The Board of Regents and Chancellor Stephen R. Portch are promoting collaboration among the state's 34 higher education institutions. The Southern College of Technology is unique in that it has a state-wide mission to meet needs of citizens and industries for technological and related instruction. SCT will implement the themes in Access to Academic Excellence while pursuing reaffirmation of accreditation by Southern Association. System priorities include use of emerging technologies to create systems for international collaboration and learning?

Strategic Planning for Human Resources Development

Many organizations provide leadership in creating conceptual frameworks for program development. The Kellogg Foundation provided support for three centers at Berkeley, Michigan, and Teachers College to develop leaders for community colleges and for the University Council for Educational Administration (UCEA). Members of the Cooperative Program in Educational Administration proposed a way to improve the preparation of educational administrators in 1954 that created UCEA. Understandings, Attitudes, Skills and Symbols: Leadership in the Future by Cunningham and Payzant (1983) gave guidance for the 1980s (ED 352 126. ED 357 829).

A Department of Education Policy, Planning, & Administration (EDPA) at the University of Maryland at College Park created The Strategic Plan (1984) based on the premise that the document will be "a work in progress" to guide people "into our work as a continuous learning organizational group...." The EDPA learning community co-created a "model to guide the planning process...to foster the concept...of a continuous learning community." The planning process enabled EDPA to develop "a matrix of integrated programs that offer a range of perspectives around a shared focus on issues of education policy and its relations to educational practice." The UCEA Document Base is available to EDPA via McGraw-Hill Primis.


CSUNET
Humboldt
Chico
UC Davis (BARRNET)
Community College Chancellor's Office
Santa Rosa
Sacramento
Sonoma
Modesto
Hayward
Stanislaus
San Francisco
TRT
IRT/Fresno
San Jose
Fresno
Stanford (NSFNET)
Fresno Unified School District
CARL
San Jose Evergreen
San Luis Obispo
Bakersfield
Los Angeles and Orange Counties
San Bernardino
Ventura
Fullerton
Northridge
Pamona
LA Comm College District
Mt Sac
San Marcos
Los Angeles
Fullerton
SWRL
San Diego
Cerritos
SWRL
SDSC (NSFNET)
LA County Office of Education
Mission Viego
Tecnologico de Mexicali
El Camino CC
Centro de Ensenanza Tecnica Y Superior
Dominguez Hills
Long Beach
Chancellor's Office
UC Irvine (CERFNET)
■ University
● K-14 Education Site
○ Connection to External Network
Protocols supported include:
X.25, TCP/IP, SNA/SDLC, DECNET
Appletalk, X.3 Pad & Frame Relay

"Keystone" States of Heart and Mind

Pennsylvania was a "Keystone" when the original 13 colonies declared their independence from the "old world" traditions. "New Habits of Heart and Mind" were adopted for a new world. Pennsylvania was a key turning point in an internal struggle about dignity, humanity, and rights. Pennsylvania is where "plain folk" created the first "Historically Black College." "New Habits of Heart and Mind" were adopted for equality.

Allegheny County and Pittsburgh, PA, were a keystone of the Industrial Era. The Cleveland to West Virginia region was a world class leader during the industrial era, primarily because of natural resources such as anthracite coal and the infrastructure to produce steel. The collapse of big steel is an example of the failure to invest in **new technology** as well as deal with **bureaucracy** and **productivity** through **human resources development**. Between 1974 and 1986, 337,552 jobs were lost and brought the death of Pittsburgh's Monongahela Valley as America's steel capital (John P. Hoerr, And the Wolf Finally Came, University of Pittsburgh, 1986). New habits have been adopted about fundamental restructuring.

In the 1980s, the federal government accelerated dual use of research and development for defense and commercial use. The Department of Defense needed an integrated industrial base. Medium and small sized manufacturing suppliers to prime contractors found it particularly challenging to keep pace with rapidly evolving technologies and management practices, not to mention plan for the future. Programs like the Ohio Transfer Technology Organization (OTTO) were created to accelerate adoption of change, to reduce the lag, and to help prevent manufacturing from going "off shore." It was perhaps better to dislocate several workers, then to lose a plant or an entire critical industry to competitors. The Ben Franklin Partnership program was created to "seed" new ideas and help fledgling start up establishments mature.

Congress provided for the DOD-sponsored Electronic Commerce Resource Center (ECRC) Program. The ECRC promotes awareness and implementation of EC and related technologies into the U.S. integrated civil-military industrial base through a National ECRC Technology Hub run by Concurrent Technologies Corporation (CTC) and a network of 11 sites. The Johnstown Regional ECRC was the first center started in 1991, followed by one in Scranton in 1992 and one in Cleveland in 1993. The National Technology Transfer Center in Wheeling (WV) uses a variety of strategies to promote use of technology.

Governor Ridge and the Legislature have created a Government Management and Cost Study Commission (IMPACCT PA) in order to improve the quality of life in the Commonwealth. An Information Technology and Productivity Task Force will deal with those important dimensions. The Technology Council of

Greater Philadelphia and the Central Pennsylvania Technology Council are working with Governor Ridge on "2000 Task Force" chaired by Mr. William Hudson, CEO of AMP Incorporated, who made the following comment at the Annual Dinner of the Central Pennsylvania Technology Council on May 10, 1995.

> Pennsylvania has a level of student proficiency in science and math that is below the national average in a country that is among the bottom of industrialized nations.

Keystone is the central stone bearing the pressure of other stones in an arch or bridge. People are the essential resource of our society and we are beginning to recognize the centrality of human resources development and the keystone processes of learning to learn. The keystone in the bridge to the Information Era is new HRD systems based on the Cognitive Sciences and Communications Technology.

Major Applied Research Projects

Virginia D. Moody has an extraordinary opportunity with her major applied research project to co-create a strategic plan for a doctoral program for federal employees. Imagine using a "Continuous Voice Activated Wireless Powerbook" to go via a Local Area Network to a Wide Area Network to a Community Electronic Village, like Celebration, to Virtual University. As a part of admission to a graduate program, you created a Leadership Development Plan (LDP) that was approved by a group of adjunct telecommuter faculty. You select from among thousands of formal learning communities worldwide to acquire the competencies and skills identified in your LDP. You follow your solution based curriculum to solve a predetermined mix of problems that will be presented in "practicum" reports and that conform to APA 5th edition electronic format. Your OUTSTANDING reports are presented in the Global Village Exposition in multiple languages. Virginia Moody will create a plan for Virtual Globalversity.

Virginia's project is important for several reasons. First, the federal government is going to restructure and governors addressed many issues at the "Federalism Summit" and through the National Governors' Association. Legislation of the past forty years will be repackaged and sent to the states. Second, states are going through restructuring. Some states will add employees, other states will reduce employees. All states need HRD for modernizing with Information Technology. Obtaining a good Return On Investment for IT is difficult. (Keyes, Jessica, (May 1995). Byte (20)5, p. 260.
Third, although numerous online delivery systems have sprung into being, very little research exists about competencies of "'Third Wave' Transformational Leaders," competencies we are using in Sustaining Learning Communities (ED 381 046). Please send Virginia and me articles about online learning.

Richard Celeste is going to create a model Police Recruit Training Program (PRTP). What are the competencies and skills a police officer needs to promote quality of life and preserve order in a culturally diverse society in different contexts ranging from low tech to high tech and deployed in multiple rural & urban political subdivisions in New Jersey? What types of technology should be in the curriculum? Wayner, P. (Dec, 1995). "DragNET" Byte (20)12, pp. 106-112.

Richard W. Coffey completed two great practicums in 1995 that provide a base for his MARP: "Development of a Project Management Learning Tool for Human Resource Employees Within Boeing Everett Division" and "Development of a Total Quality Management Implementation Plan for Human Resource Training Department Emplovees Within Boeing Everett Site." Boeing is the world's largest commercial jet maker, employees 90,000 people, and received orders for 255 planes worth nearly $18 billion in 1995. His topic is "The Development of a Human Resources Department Strategic Plan to Support the Future Business Needs of Boeing Commercial Airplane Group."

Greet advisee **Wardine M. Wood** woodw@alpha.acast.nova.edu

Terrence H. Overlock has completed the editorial revisions on <u>A Multi-Year Plan for the Utilization of Multimedia Technology at Northern Maine Technical College</u>. NMTC works with 36 high schools in two tech-prep consortia in NE Maine. Imagine what we could do if we had one professional from the schools in the Computing & Information Tech specialization.

Norman C. Hintz completed a gown-town multi-year action plan for Flagstaff & Northern Arizona University. The plan could become the foundation for similar projects at some of the 50 sites at which NAU communiversity delivers education programs via NAUNet. Imagine what we could do if we had one professional from each site in the CIT specialization.

"Sustaining Learning Communities in the Digital Era" has taken on a life of its own. The last memo in December contain a list of research questions and issues of some of advisees. Imagine the potential for growth over the next several months via TALK, NOTESfile, and ecrs.

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                    Winter                       Spring
Student     Jan      Feb      Mar      Apr      May      Jun

 1        T  T  T  T  T  T  T  T  T  T  T  T  T  T  T  T  T
 2          T  T  T  T  T  T  T  T  T  T  T  T  T  T  T  T  T
 3            T  T  T  T  T  T  T  T  T  T  T  T  T  T  T  T  T
```

Also, after a prospectus and/or a proposal is approved, the document can be available electronically. Phillip Davis has made his proposal available. You can access it as follows:

http://alpha.acast.nova.edu/~davisp or

lynx http://alpha.acast.nova.edu/~davisp

I will circulate a copy of his proposal to advisees.

SUSTAINING LEARNING COMMUNITIES
Vol. 2, No. 2, January 1996

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FIVE PRINCIPLES OF THE STRUCTURAL REVOLUTION

First, it takes a **personal commitment** on the part of the CEO. This is not a job you can delegate.
Second, it takes a **willingness to confront** and expel the people and the organizations that are throwing up roadblocks to the changes you consider critical.
Third, you need to set **high expectations**. You should not have too many goals. One or two goals are best.
Fourth, it's critical to **measure the progress** against goals - relentlessly and continuously.
And finally, there must be a willingness on the part of the change agent to **hold people accountable** for results.

Louis V. Gester, Jr., National Governors' Association
July 30, 1995

* * * * * * * * * *

INTELLECTUAL CAPITAL FOR RESTRUCTURING

D. E. Kalish of the Associated Press wrote an article entitled "Corporate Mergers, Bull Market Made 1995 a Year of Milestones" (The Commercial Appeal, Dec 10, 1995, B4). The article states, "The business world set so many records in 1995 that it may have set yet another record: for the most records. The list includes the greatest number of corporate mergers, the greatest number of record highs on Wall Street and the longest government shutdown in history."

A month earlier, The Pew Health Professions Commission urged the closing of many U.S. medical schools over the next decade. The panel recommended that medical schools admit 20 to 25% fewer students by 2005. The panel urged similar retrenchment in pharmacy schools and elimination of at least 10% of nurse training programs.

Signs of restructuring are numerous. What are the implications for **High Performance Learners and Leaders?**

* * * * * * * * * *

"By the year 2000, American colleges and universities will be lean and mean, service oriented and science minded, multicultural, and increasingly diverse -- if they intend to survive their fiscal agony."

John Elson. "Campus of the Future."
Time, v. 139, n. 15 April 13, 1992.

Rethinking for Restructuring and Revitalizing

Governmental planning variables are critical to analyze even in periods of expansion of the economy. It is even more important to analyze federal and state legislation and proposed bills during periods of restructuring such as the U.S. is experiencing today. A first major indicator of restructuring by the federal government was contained in the 1993 Report to the President by the Defense Base Closure and Realignment Commission. "Contract with America" and related activities provides new impetus to reexamine what is occurring at national and state levels. Representative Walker proposed a Department of Science. Representative Goodling proposed a "Careers Act." Congressman Gunderson proposed Creating a Department of Education and Employment. The National Governor's Association meeting last July focused on restructuring. That was followed by "Federalism Summit: Restoring Balance in the Federal System." The 40 years of legislation will be repackaged into block grants. Who knows what will happen to unfunded mandates? Many things are unclear. What will happen to the Office of Technology Assessment resource base? What will happen to the Advanced Technology Program? How can data bases that are useful be retained and reconfigured? Educators and state planners have adjusted to changes in legislation and titles over the past several years but this restructuring will pose new challenges to leaders and policy makers.

The Organisation for Economic Co-operation and Development (OECD) has developed a uniquely internationally-comparable data base of indicators for sector analysis. The indicators for 13 of the 24 member nations cover five broad areas of manufacturing performance: business enterprise research and development: investment: international trade: employment: and production. Trends from an OECD study are

- The pre-eminence that the U.S. enjoyed across a wide variety of sectors has declined over the past two decades, but the U.S. still enjoys a considerable lead in many sectors, particularly the high technology industries.
- Where the U.S. has lost ground, it has usually been Japan that has gained. In many cases these gains have been broad-based, emanating from technology sectors.
- As Japan has gained, the European Community countries that were studied have seen the erosion of their position.

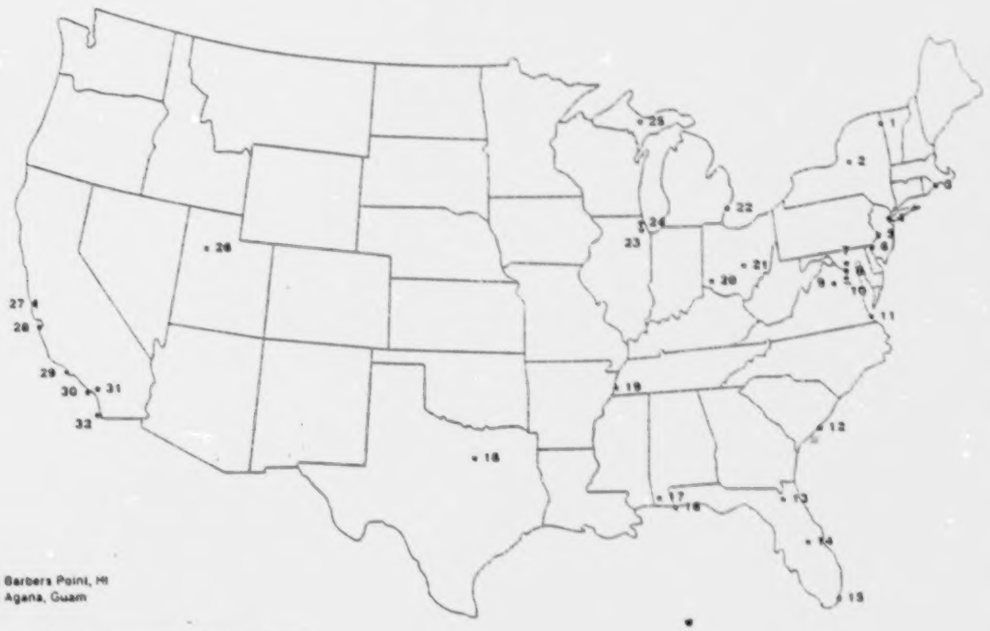
The globalization of the world economy is causing all nations to analyze human resources development policies and systems. Education, K through postgraduate, and training will be modernized and restructured through (a) internal initiatives and/or (b) forces external to the enterprise. The OECD Education Committee completed a three year analysis of "The Changing Role of Vocational and Technical Education and Training" (OECD). Industrialized nations will co-create and re-engineer education & training to be more competitive.

Military Employment in 10 Largest States (total U.S. military employees = 2,223,015)

State	Population	% of nation's population *	Number of DOD employees **	% of total DOD employees
1. California	30.4 million	12.1	309,991	13.9
2. New York	18.1 million	7.2	42,705	1.9
3. Texas	17.3 million	6.9	169,000	7.6
4. Florida	13.3 million	5.3	107,425	4.8
5. Pennsylvania	12.0 million	4.7	56,438	2.5
6. Illinois	11.5 million	4.6	51,712	2.3
7. Ohio	10.9 million	4.3	47,035	2.1
8. Michigan	9.4 million	3.7	20,010	0.9
9. New Jersey	7.8 million	3.1	37,096	1.7
10.North Carolina	6.7 million	2.7	115,571	5.2

**Resident state population as of Dec. 30, 1991*
***Military and civilian employees as of Sept. 30, 1991*
Sources: Department of Defense and U.S. Bureau of the Census

Major Base Closures and Realignments



NAS Barbers Point, HI
NAS Agana, Guam

Note: "Major" = loss of at least 300 military/civilian jobs

Cognitive Sciences and Communications Systems

World class Human Resources Development systems are emerging based on basic research from the cognitive sciences and the communications systems. New American Schools Development Corporation (NASDC: 703-908-9500) and the USDE Star Schools program represent some of the most advanced designs.

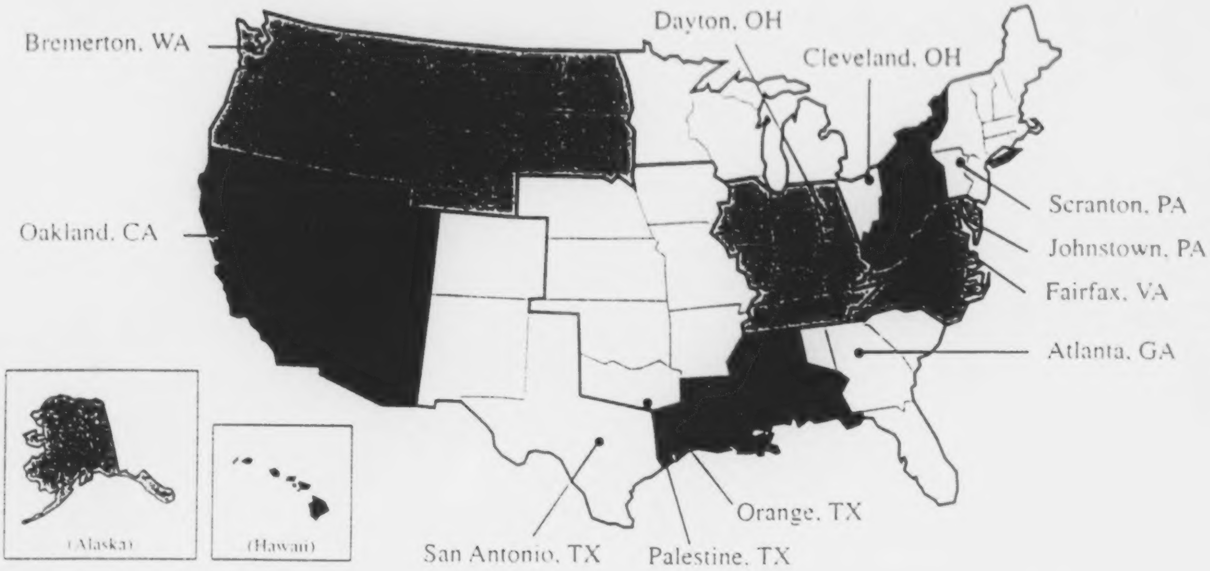
Cognitive Sciences: Mind

Research in the cognitive sciences will play a major role in re-engineering education. Scientific American produced a volume on "Mind and Brain" with a great deal of research. Judith Hatula co-created a human resources development plan for Telecom Finland, Ltd., a former public monopoly that the government decided would become a market-driven private sector establishment beginning Jan 1, 1994. What is needed for a service-oriented establishment in a telecommunications industry that is rapidly restructuring in the dynamics of the European Union? Her research included an analysis of **cognitive style mapping, learning style and brain dominance, neuro-linguistic programming, personality types**, Tuplatiimi (of Finish origin), and other topics (a) to understand the culture and how the mind functions and (b) to co-create an HRD strategic plan for Customer Service. Frank Hirsch wrote "Identification and Analysis of Leader Communication Styles at Boeing - Corinth" and Karen Wray completed "Comparison of a Brief Personality Survey with the Myers Briggs Type Indicator (MBTI)." The projects were all completed in 1995.

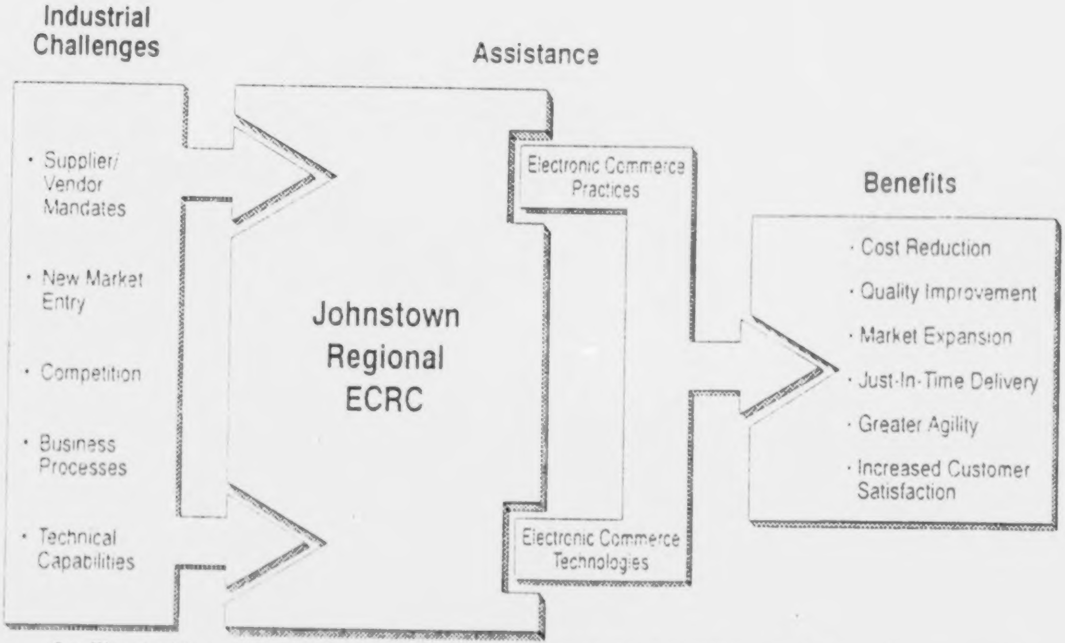
Communications Systems: Databases and Networks

It was apparent in the early 1980s that advanced computer and telecommunications technologies were essential to the competitiveness and viability of any nation in the future. Six supercomputers funded by the NSF support educational activities. The Pittsburgh Supercomputer Center supports "Coursework Grants" with a database of users (412-268-4960). The High Performance Computing Act of 1991 (Public Law 102-194) provided the impetus for many initiatives. The Department of Defense (DOD) sponsors the **Electronic Commerce Resource Center** (ECRC) Program. The ECRC National Hub in Johnstown, PA, works with centers in Cleveland, OH: Scranton, PA; Atlanta, GA: Dayton, OH; San Antonio, Orange, and Palestine, TX: Fairfax, VA; Oakland, CA and Bremerton, WA. The **National Technology Transfer Center** in Wheeling, WV, is working with the Federal Laboratory Consortium to accelerate the rate of adoption of contemporary technology.

What are the implications for RETHINKING for RESTRUCTURING? What do we need to know about CS: Mind and CS: **Databases and Networks** to re-engineer and to co-create more effective HRD systems? What are the implications for technology literacy?


Bremerton, WA
Dayton, OH
Cleveland, OH
Oakland, CA
Scranton, PA
Johnstown, PA
Fairfax, VA
Atlanta, GA
Orange, TX
San Antonio, TX
Palestine, TX
(Alaska)
(Hawaii)

The nationwide network of Regional ECRCs provides the initial and most direct contact with U.S. manufacturers


Industrial Challenges
· Supplier/ Vendor Mandates
· New Market Entry
· Competition
· Business Processes
· Technical Capabilities
Assistance
Johnstown Regional ECRC
Electronic Commerce Practices
Electronic Commerce Technologies
Benefits
· Cost Reduction
· Quality Improvement
· Market Expansion
· Just-In-Time Delivery
· Greater Agility
· Increased Customer Satisfaction

An illustration of the ECRC service model and the benefits of electronic commerce.

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"Keystone" States of Heart and Mind

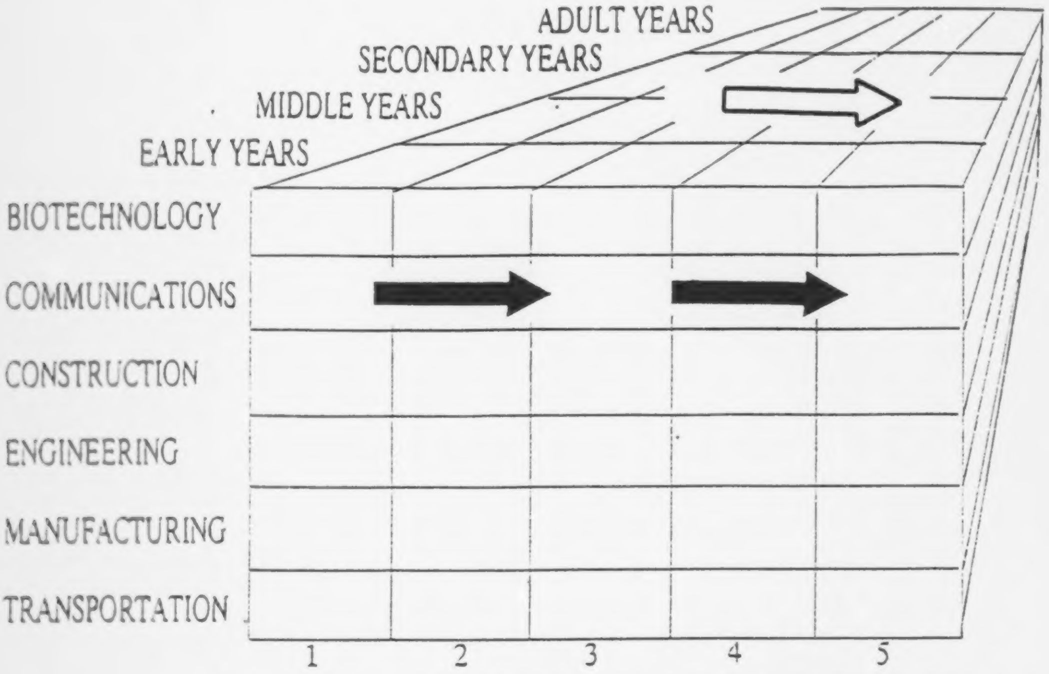
Education is essentially a state function in the United States. Federal government expenditures amount to about 7% for preschool through postgraduate education. Programs are scattered throughout several departments -- agriculture, commerce, education, health and human services, labor, etc. A Nation at Risk helped to raise the level of awareness of the crisis in education that continued through the 1980s and led to the National Governor's Association playing a lead role in the education summit of 1989 that produced America 2000 and evolved into Goals 2000 (P.L. 103-227).

States vary considerably in commitment, policy, programs and structure for education. States vary in stages of strategic planning, setting standards, and technology education, K-16. The Pennsylvania State Board of Education (SBE) guidelines began to make reference to K-12 technology education in 1984 and in 1993 approved 15 performance-based education goals that contain 53 student learning outcomes. Boards of education and superintendents were to create and implement strategic plans which specify how the school districts and area vocational-technical schools will help students reach the intended outcomes. One-third of the school districts developed strategic plans in 1993-94. Another third of the districts developed strategic plans in 1994-95. The other districts may be developing strategic plans in 1995-96.

An extremely high priority relates to understanding the communication system that is evolving and integrating that body of knowledge into a curriculum with developmentally appropriate content and delivery system formats. Business is already using voice activated PCs that transmit audio, data, and voice to multiple locations simultaneously. Within the next few years it will be possible to send high quality education and training in an open entry - open exit format into a community agency, home, school site, or workplace. Genuine partnerships between education at all levels and the private sector are emerging and they will create a seamless articulated and integrated set of learning experiences with generic competencies and domain specific skills. Domain specific skills could include the voluntary standards for the 22 occupational projects funded by the U.S. Departments of Education and Labor (ED 383 040).

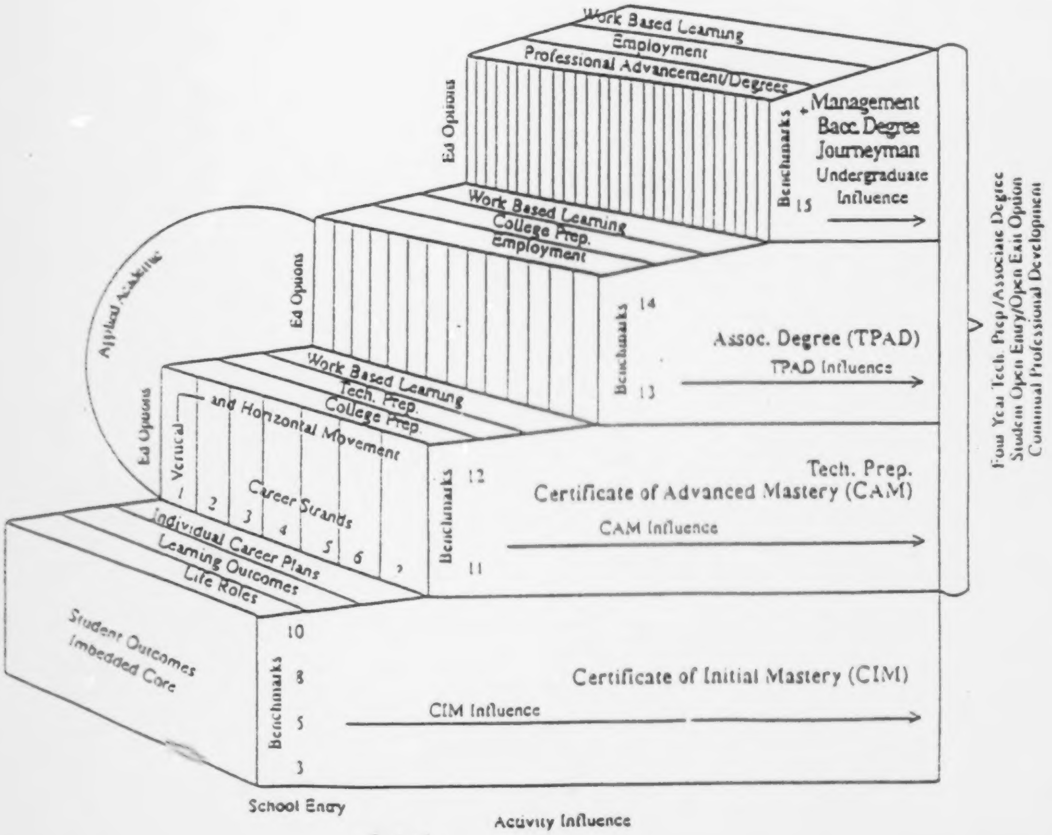
A critical issue for all states is the preparation of workforces for the workplaces of the future. Pennsylvania prepares students in vocational-technical education (VTE) through 84 area vocational-technical schools (AVTS), 513 high schools, and 87 postsecondary institutions. Program review is a critical issue - equal access to high quality programs. Access to state-of-the-art technology is critical to produce **High Performance Knowledge Workers** for the future in re-engineered paradigms (see Attachment).

BORDERLESS & SEAMLESS SOLUTION BASED LEARNING


ADULT YEARS
SECONDARY YEARS
MIDDLE YEARS
EARLY YEARS
BIOTECHNOLOGY
COMMUNICATIONS
CONSTRUCTION
ENGINEERING
MANUFACTURING
TRANSPORTATION
1
2
3
4
5

CONTINUOUS QUALITY IMPROVEMENT BENCHMARKS
TO PRODUCE HIGH PERFORMANCE LEARNER WORKERS

1/2/9'


Work Based Learning
Employment
Professional Advancement/Degrees
Ed Options
Benchmarks
Management
Bacc. Degree
Journeyman
Undergraduate
Influence
15
Work Based Learning
College Prep.
Employment
Ed Options
Applied Academic
14
Benchmarks
13
Assoc. Degree (TPAD)
TPAD Influence
Four Year Tech. Prep./Associate Degree
Student Open Entry/Open Exit Option
Continual Professional Development
Work Based Learning
Tech. Prep.
College Prep.
Ed Options
Vertical
and Horizontal Movement
Career Strands
1
2
3
4
5
6
7
Benchmarks
12
11
Tech. Prep.
Certificate of Advanced Mastery (CAM)
CAM Influence
Individual Career Plans
Learning Outcomes
Life Roles
Student Outcomes
Imbedded Core
10
8
5
3
Benchmarks
Certificate of Initial Mastery (CIM)
CIM Influence
School Entry
Activity Influence

Major Applied Research Projects

James Corbett has developed a modular technology-based curriculum for exploratory agricultural education at Lowndes Middle School in Valdosta, GA. To what extent can the units be sent to other schools in GA and then to other countries?

Oscar Vazquez-Melendez is creating a distance learning model curriculum in Spanish to prepare Hispanic migrant farm workers for the General Educational Development (GED) tests. The University of Tennessee High School Program is being modified & written in Spanish for the five areas in writing skills, science, math, literature and the arts, and social sciences. Imagine Hispanic families attaining proficiency in basic skills via contemporary technology as they migrate from south to north in spring and from north to south in fall. Oscar's four state service area is GA, NC, SC & TN.

Ruth Ann Winchester is developing a proposal for business programs for the Henry County School System in Lithonia, GA. How should electronic commerce be included in a curriculum? How can generic and domain specific content be horizontally integrated and vertically articulated in a tech prep format and electronically distributed into home and workplace?

Shirley Gantt is developing a proposal for an integrated information system (IIS) in instruction at Carroll Technical Institute, GA. How can an IIS facilitate student learning to access databases from throughout the world via networks? How will IIS provide for electronic online articulation?

Pearley Cunningham will develop a strategic plan to deliver the electronic engineering technology (EET) program at up to the four sites of the Community College of Allegheny County. How can the content be distributed to vocational- technical schools and school districts in the area (see Attachment)? How can CCAC network with other colleges and schools?

Jim Thrasher will develop a strategic plan for the Career Services Office at Grove City College that includes areas of career development and the job search for students in the liberal arts, sciences, business, and engineering. GCC is a major providers of teachers for the school districts in that area of Pennsylvania. How can CSO network with employers?

Karen Hoblit is working on the "Development of a Strategic Plan for Integration of Instructional Technology at Victoria College" in Victoria, TX (see Attachment). Colleges are being mandated to plan to use technology in classrooms.

Wardine P. Wood works in the Division of Foreign Missions of the Assemblies of God in Springfield, MO. She will create a Human Resources Development strategic plan based on a survey of 1,700 missionaries serving 140 countries.

Conceptual Framework

The Development of a Strategic Plan to Provide a Multisite Electronic Engineering Technology Program at the Community College of Allegheny County

Pearley Cunningham

Research Questions	Chapter 1 Introduction	Chapter 2 Review of Literature	Chapter 3 Methodology and Procedures	Chapter 4 Results	Chapter 5 Discussion, Conclusions, Implications and Recommendations
1 How can the newer electronic communications technologies be used to provide a virtual learning community accross the college? 2 What is the appropriate strategic plan (a) to offer a multisite program by network communications, (b) to establish the needed coordination between program levels and institutions (c) to dessiminate the plan, and (d) to develop an assessment process of the plan's effectiveness 3 Can the kknowledge and skill levels expected by industry of graduates be achieved through a multisite networked program?	Profile the college and campus with "CCAC in Focus" Review college mission with respect to technology and the South Campus Profiles Experiences of South campus students with email Describe reduced enrollment and one campus nature of EET program Articulation with CUP and PPC colleges Advisory committee work, and AEG pratnerships	Discuss topics in literature related to (a) email and conferencing (b) CAI, use and effectiveness (c) Networks (d) multimedia (e) Normal Distance Education or Learning (f) Computer based distance learning. Define Asynchronous distance learning ADL and synchronous distance learning SDL (g) World wide web and the Internet (h) Student DL station (i) The EET curriculum (j) strategic planning at CCAC (use of SWOT and visioning) (k) Faculty concerns (1) load (2) copyright (3) quality	Step 1 Develop SWOT with respect to the EET program with the assisthace of the department members Step 2 Review of literature related to distance learning with emphasis on use of the computer Step 3 Contact other schools that are using using ADL approaches especially in ET ralated fields Step 4A Determine process by which ADL can be applied to the EET program Step 4B Develop list of equipment and software needed for the Student DL station. Prepare cost estimations for use of WAN and for use of phone modems to nclude in strategic plan Step 5 Present initial plan to education and industry advisory committees Step 6 Revise plan Step 7 Present revised plan to both advisory groups Step 8 Develop formal strategic planning document for review by advisory committee Chairs, the campus Dean and the MARP advisor. Step 9 Revise plan as needed and present to the campus Dean. Include copy in Appendix of MARP report	Describe the results of the department SWOT Describe the results of contacts with other schools Describe selection of media tools needed for ADL Describe the development of the plan and the reactions of the two advisory committees Describe the steps taken to prepare the technical specifications for the Student DL station and costs Describe the results of the reviews by chairs, the Dean and the MARP advisor	How the plan relates to the literature. Specific items in plan to develop community How plan offers coordiantion with other programs at CCAC and other schools How plan will be communicated to college community Incorporation of existing college planning and evaluation processes to keep plan effective Recommendataions for future action, etc.

December 1995

CONCEPTUAL FRAMEWORK

DEVELOPMENT OF A STRATEGIC PLAN FOR INTEGRATION OF INSTRUCTIONAL TECHNOLOGY AT VICTORIA COLLEGE

by Karen Hoblit

RESEARCH QUESTION	CHAPTER TWO LITERATURE REVIEW	CHAPTER THREE METHODS & PROCEDURES	CHAPTER FOUR RESULTS	CHAPTER FIVE DISCUSSION & CONCLUSION
1 What should be the elements of a strategic plan to integrate instructional technology into the teaching methodology at VC?	Review strategic plans of other institutions as well as literature on strategic planning and technology change	1 External audit which includes review of literature and assessment of Texas plans	Findings from the literature will be listed	Relate the findings of the literature review to the components of the strategic plan, including organizations and HRD sections
2 What organizational development is needed to implement a plan to integrate instructional technology into teaching at VC?	Review literature on leadership and governance. Review current institutional and technology plan for VC	2 Internal audit to include examination of institutional plan, technology plan and budget 3 Recruitment of formative committee which will include members from both within and outside the institution	Strategic plan will be, completed and included in the appendix	Discuss the potential impact of instructional technology on learning at VC according to the results of the initial training sessions
3 What (HRD) activities should be included in an action plan to integrate instructional technology into teaching at VC?	Review literature on faculty training	4 Draft strategic plan for committee review, then revise plan	Training session materials will be included. A report will be given of evaluation of pilot test group and revisions made	
4 What instructional technologies have been successfully integrated into teaching at other institutions of higher education?	Examine case studies from other institutions as per literature and interviews with other teaching professionals	5 Assemble Human Resource Development materials	Results will be confirmed of what technology others are using successfully	Summarize the findings of the literature on technology uses at other institutions and how these findings may translate to the environment at VC
5 How has instructional technology impacted the learning environment?	Review literature on learning styles and effects of multimedia on learning	6 Pilot group will complete in service training & evaluate. Revisions will be made based on evaluations	Results will be stated of how technology has impacted learning according to the literature	Make recommendations on future implementation and follow up procedures
6 How can VC effectively evaluate integration of instructional technology into teaching curriculum?	Examine evaluation techniques and tools used by other researchers	7 Hold VC technology fair 8 Summative committee reviews plan	Evaluation tools will be included in the appendix	Discuss possible evaluation for plan once implemented

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Bits & Bytes

Lisa Guernsey, "Cyberspace Citations," The Chronicle of Higher Education, January 12, 1996, XLII, No. 18, A18 & A20.
"A Brief Citation Guide for Internet Sources in History and the Humanities" by Melvin E. Page.
gopher://h-net.edu:70/00/lists/H-AFRICA /internet-cit
"Bibliographic Formats for Citing Electronic Information" includes examples of new guidelines that will be included in Xia Li's and Nancy B. Crane's upcoming book The Official World Guide to Elecctronic Styles: A Handbook to Citing Electronic Information (Meckler, 1996).
http://www.uvm.edu/~xli/reference/estyle.html
"MLA-Style Citations of Electronic Sources" by Janice R. Walker. http://www.cas.usf.edu/english/walker/mla/html

For a free copy of Intellectual Property and the National Information Infrastructure: The Report of the Working Group on Intellectual Property Rights (September 1995), write to
"Intellectual Property and the NII"
Ms. Terri A. Southwick, Attorney-Advisor
Office of Legislative and International Affairs
U.S. Patent and Trademark Office, Box 4
Washington, D.C. 20231

For an article about a high tech community in Finland, see "In the Cold and the Dark, High-Tech Heat," Gail Edmondson, Business Week, Sept 25, 1995, 3443, pp. 120-122.

"1995 was the first year computers outsold television sets in the United States. Internet purchasing options will change the face of retailing forever. The issue here is growth. Nonusers are becoming users, and users are becoming buyers. But this is not an issue of replacing stores. It's an opportunity to expand stores."
Watts Wacker, SRI International at the National Retail Federation. The Commercial Appeal, January 16, 1996.

"Go international or die." -- Alden G. Lank, Family Firm Institute, Nation's Business (84) 1, Jan 96, p. 39.

Read "In Pursuit of 'World Standards'" by John Foster, T.H.E. Journal, January 1996, (23) 6, pp. 57-59.
Also, read the editorial by Sylvia Charp on page 4. Japan's Toward the Intelligent Society of the 21st Century (1994) proposes to network the country with fiber optics by 2010.

Allen Tough published "The Adults' Learning Projects" in 1991. What the Public Wants from Higher Education by Don A. Dillman documents that lifelong learning is a reality for most Americans. Technical Report 95-52 can be obtained from
Social & Economic Sciences Research Center
Washington State University, Pullman, WA 99164-6210
Phone: 509-335-1511 Fax: 509-335-0116

SUSTAINING LEARNING COMMUNITIES
Vol. 2, No. 3, February 1996

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"Electronic Commerce Becomes the Norm, Not the Exception"

> It wasn't too long ago, that fax machines were a novelty, and people hesitated to use them. Most organizations quickly adapted, however, and now fax machines are everywhere. Back then, no one realized that a business revolution was under way, but it wasn't long before we found out.
>
> Now a similar business revolution is taking place. It's the Electronic Commerce revolution. Like the fax revolution before it, Electronic Commerce promises to change the way we conduct business for the better.
>
> The fact is, the world is already moving at light speed. Electronic banking, home shopping and e-mail are just a few examples. The biggest push by the government is yet to come. President Clinton established a 1997 deadline for full government-wide Electronic Commerce.
>
> -- ECRC News, Winter-Spring, 1995

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HIGH PERFORMANCE LEARNER AND LEADER

The ultimate purpose of graduate and postgraduate education is to design programs to promote improvement in the quality of services that are provided in a variety of different contexts and systems -- health and human services, business and industry, government and public service, and education and training. To achieve that ultimate purpose, professional educators engage in basic and applied research, analyze and synthesize vast quantities of information, and create conceptual frameworks and action plans for the preparation of leaders for the above-mentioned contexts.

A High Performance Learner and Leader (HPLL) in the 1990s needs better competencies and different skills than a manager needed during the expansion era of the 1950s and 1960s or for the modernization era of the 1970s and early 1980s. Modernizing education and training in the 1970s and 1980s was difficult during a period of major advances in science and technology that impacted on workforce and workplace needs. The transition from an industrial era to an early technical era was complex and fast. However, the transition from the early technical era to the advanced technical era of the late 1990s and 21st century will be even more complex and occur at an even faster rate. What then should be the vision and action plan that is likely to yield world class High Performance Learner and Leader?

Rethinking for Restructuring and Revitalizing

Types of jobs are an indication of the economy and society. During the emergence of the industrial era, many jobs were in extracting things from nature to manufacture products. Raw material was extracted from earth, the INPUT transported to a PROCESS factory to convert to OUTPUT in durable goods. Anthracite coal mining jobs increased and then declined:

Year	Tons	Employees
1870	14.0 M	35,600
1917	100.0 M	156,000
1992	4.8 M	2,500

(Virginia Wieland. "Remembering the Pride and Pain of PA Coal Mines." The Philadelphia Inquirer, Aug 7, 1994, B-1.

During a post industrial era, bureaucratic structures with multiple layers of management provided many jobs. Global competitiveness through technology accelerated a transition into an early technical era and the start of restructuring. Big job loss was complied by Challenger Gray and Christmas, Inc., a Chicago-based employment outplacement firm:

Firm	**Jobs Lost**	**Time**
International Business Machines Corp.	63,000	July 1993
Sears, Roebuck, and Co.	50,000	Jan. 1993
AT & T Corp.	40,000	Jan. 1996
Boeing Company	28,000	Feb. 1993
Digital Equipment Corp.	20,000	May 1994
GTE Corp.	17,000	Jan. 1994
Nynex Corp.	16,800	Jan. 1994
AT & T Corp.	15,000	Feb. 1994
Delta Air Lines	15,000	Apr. 1994
Lockheed Martin Corp.	15,000	June 1995

Advances in science and technology are causing fundamental restructuring of economies. How will **Asychronous Transfer Mode (ATM), cellular, multimedia, and smart technologies** evolve over the next few years? What are the implications? "Though **smart cards** technology is just beginning to take hold in the United States and Europe, consumers and businesses in Asia have been developing applications for the cards for several years. In Taiwan, a wide group of consumers are using smart cards as a more convenient alternative to existing credit cards. The seed of Taiwan's smart card system dates back to the early 1980s, when a group of bank executives, retailers, and government officials established the Financial System Center (FISC). Currently, smart cards in Taiwan are used in close to 3,000 retail outlets." Solutions, Unisys, Blue Bell, PA, 1995.

In Pennsylvania, "2000 Task Force" is a blue-ribbon panel to develop a strategic blueprint for technology infrastructure. How will Cleveburgh, Mon Valley, and a Greater Philadelphia Citystate evolve? How should results oriented government be co-created? What are the implications for K-16+ education?

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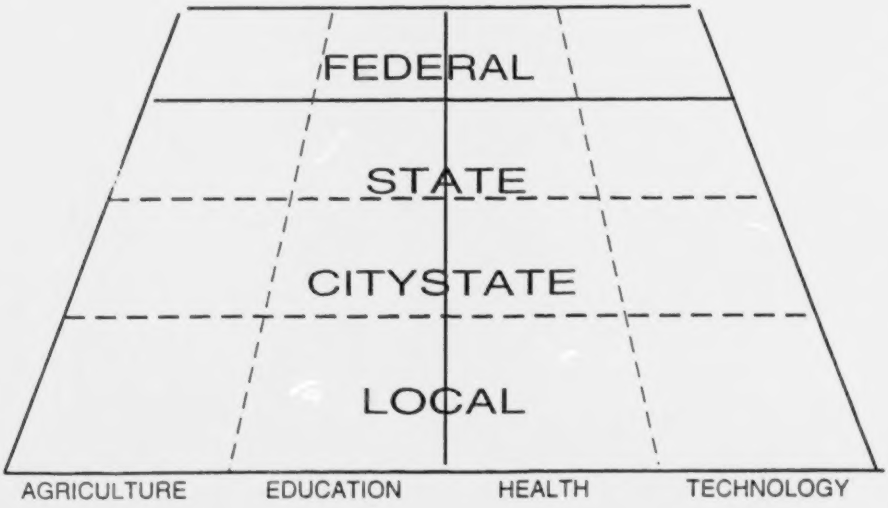
PITTSBURGH AND THE MONONGAHELA VALLEY

CLEVELAND-AKRON-LORAIN
DAYTON SPRINGFIELD
CINCINNATI-HAMILTON
PITTSBURGH
PHILADELPHIA-WILMINGTON-TRENTON (PART)
N

In this map Pittsburgh is actually part of a huge "city" which could be called "Cleveburgh."

RESULTS ORIENTED GOVERNMENT POLICY & SERVICE DELIVERY


FEDERAL
STATE
CITYSTATE
LOCAL
AGRICULTURE
EDUCATION
HEALTH
TECHNOLOGY

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Cognitive Sciences and Communications Systems

New world class Human Resources Development systems will be required for people in the U.S. to enjoy a high quality of life. A century of research to identify Types of Men (Spranger, 1928) and methods to diagnose preferences and styles (Kolb, 1971) has led to Frames of Mind: The Theory of Multiple Intelligences (Gardner, 1985). The January issues focused on both components of CS & CS. This issue will focus on Communications Systems: Databases & Networks.

The first issue in January indicated that much of the U.S. initiative for the National Information Infrastructure is from the Office of Science and Technology Policy (OSTP) of the Executive Office of the President and from the U.S. Dept of Commerce (OSTP - **http://www.whitehouse.gov/OSTP.html**).

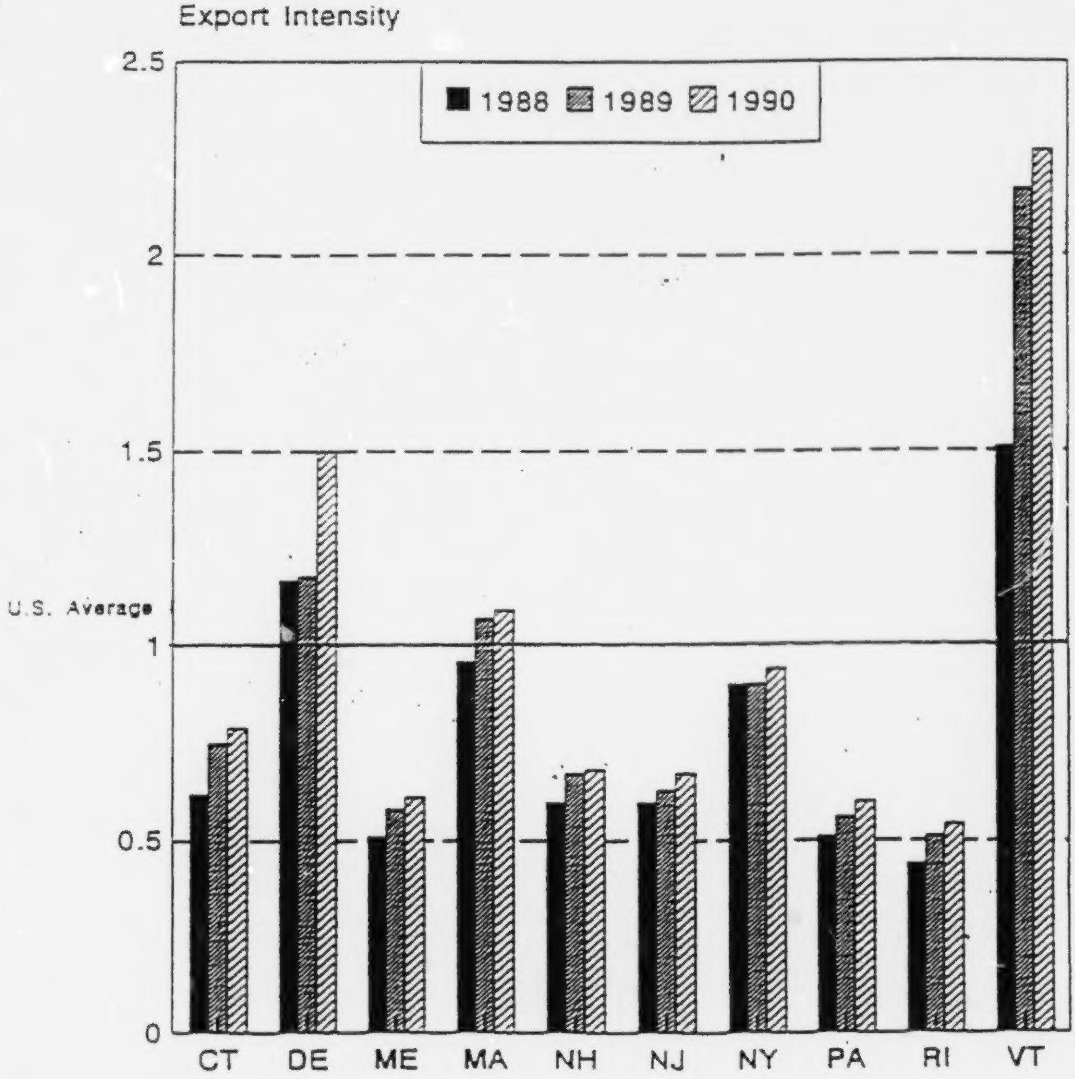
The second issue in January indicated that the Electronic Commerce Resource Centers (ECRC) and the National Technology Transfer Center (NTTC), collaborating with the Federal Laboratory Consortium, will accelerate change to Electronic Commerce & Electronic Data Interchange (EC-EDI). Consider the following: "Each day, the Department of Defense (DOD) purchases goods and services from nearly 350,000 vendors across the U.S. Over 98% of these purchases come from small- to medium-sized enterprises (SMEs). In the very near future, the DOD will require that the majority of these transactions take place using electronic commerce, especially EDI" (ECRC News, Summer 1995, p. 1).

The Pennsylvania Department of Commerce is in the process of reconfiguring, integrating, and up-grading its management information systems; DC is implementing a local area network (LAN). DC is moving toward a new generation of business oriented, customer-driven systems. EC-EDI will use e-mail, e-fax, file transfer, and online access at an accelerated rate. The Commonwealth of Pennsylvania has a home page on the World Wide Web (**http://www.state.pa.us**).

Targeting Export Markets for Pennsylvania (1993) indicates that most of the Middle Atlantic and New England are below the U.S. average in overall export intensity. Act 67 of 1993 regulates telecommunications services in Pennsylvania. On February 1, Congress voted to liberate the information industries to expand areas and reshape culture and commerce.

What are the implications for **RETHINKING for RESTRUCTURING? What do we need to know about CS: Mind and CS: Databases and Networks** to re-engineer and to co-create more effective HRD systems? What are the implications for technology literacy? What are the implications for colleges and schools in the Greater Pittsburgh Area and the Greater Philadelphia Area Citystate with most of the state's high tech companies? (Allegheny has 773 & Montgomery has 274, PA Tech Council).

Chart 2.3C
Overall Export Intensity
Northeastern States, 1989-90



Calculated by the Urban Institute using
data provided by MISER and US Dept. of
Commerce, Bureau of Economic Analysis

"Keystone" States of Heart and Mind

One of the "keystone" states of heart and mind relates to the know-how technology of Benchmarking Continuous Quality Improvement. Statistical Process Control and Statistical Quality Control (SPC & SQC) used in manufacturing in the 1970s and early 1980s led to Total Quality Management (TQM).

"Quality" became a central focus with the passage of the Malcolm Baldrige National Quality Improvement Act of 1987 (Public Law 100-107). The Malcolm Baldrige National Quality Award is in its ninth year and is administered by the National Institute of Standards and Technology (NIST) of the U.S. Department of Commerce.

Armstrong World Industries, Inc., a Lancaster, PA-based maker of acoustical ceiling systems, and Corning Telecommunications Products Division of Corning, NY, were the two 1995 award winners. The Criteria for 1996 further strengthen and integrate the business performance and competitiveness themes highlighted in 1995. Also, more guidance is given to support the development of business improvement priorities. Pilot criteria were developed for education and for health care for 1995. Criteria are (a) leadership, (b) information and analysis, (c) strategic planning, (d) human resources development and management, (e) process management, (f) business results, and (g) consumer focus and satisfaction. In 1995, 46 health care and 19 educational organizations submitted applications as part of the pilots. NIST's pilot quality award programs in health care and education will be discontinued in 1996 because federal funding to support them is not included in the proposed appropriations (Jan Kosko, 301-975-2767).

Malcolm Baldrige National Quality Award
National Institute of Standards and Technology
Building 101, Room A-537
Gaithersburg, MD 20899

The Federal Quality Institute was created to help implement CQI throughout units of government. Arthur D. Little did extensive research on CQI/TQM in manufacturing and service companies. IBM and other corporations formed partnerships with colleges and universities to implement CQI/TQM. Fox Valley Technical College and Noel-Levitz joined forces to form a National Quality Academy. Benchmarking is a process of analysis of best practices in "world class" enterprises and setting standards to be achieved at various levels or stages. Benchmarking was added to CQI/TQM. The American Society for Quality Control created a process for schools:

ASQC Koalaty Kid (for schools)
611 East Wisconsin Avenue
P.O. Box 3005
Milwaukee, Wisconsin 53201-3005
800-248-1946

What are the implications of benchmarking and CQI/TQM?

Federal Quality Institute
National Technical Information Service
FQI Information Network

Arthur D. Little
survey of 500 executives from
manufacturing and service companies

The IBM - TQM Partnership

National Quality Academy
Noel Levitz Centers

Total Quality Institute

BENCHMARKING

QUALITY ***as good as*** **TOYOTA**

SERVICE ***as good as*** **NORDSTROM**

RESPONSE TIME ***as good as*** **FEDERAL EXPRESS**

SOCIAL RESPONSIBILITY ***as good as*** **J & J**

PRODUCT RESPONSIBILITY ***as good as*** **3M**

ADVERTISING ***as good as*** **BUDWEISER**

DISTRIBUTION SYSTEMS ***as good as*** **WALMART**

VISION ***as good as*** **SONY**

Major Applied Research Projects

Norman C. Hintz has completed Development of a Plan for the Town-Gown Relationship Between the Community of Flagstaff and Northern Arizona University. Dr. Hintz's multi-year plan is being reproduced and will be distributed throughout Flagstaff and NAU. President Clara M. Lovett has designated a faculty fellow to begin a collaborative process to make a good gown-town relationship even better through the plan. Congratulations Norm on an outstanding job.

Twenty-First Century Jet: The Making and Marketing of the Boeing 777 by Karl Sabbagh is a book worth reading. The 777 was designed entirely on computer screens, using unprecedented teamwork. What type of **Continuous Voice Activated Wireless Powerbook** does an executive need at home, in the office, on a plane, or in a foreign country to transact business? How will the next generation 777 (or 787) be engineered and then progress through manufacturing, demonstration & sales, and service? What are the Human Resource Development (HRD) needs of the thousands of employees to produce and then maintain the next generation plane? Boeing is the world's largest maker of commercial aircraft, followed by Europe's Airbus Industrie and St. Louis-based McDonnell Douglas Corp. Big orders from airlines in Saudi Arabia, Malaysia and Taiwan created demand for aircraft and Boeing won 70% of new orders last year. Sinapore Airlines placed an order for 777s last November that could amount to as much as $12.7 billion. GE Capital Aviation Services, the world's largest aircraft leasing company recently ordered 107 aircraft: five new 777s, and 102 737s including 82 new models that are under development. What research question could **Rick Coffee** consider in a MARP that will focus on HRD requirements for the Everett site?

Greet advisees **Dan Anglin** and **Ben Kaufman**. Dan, Education Director of the Asia Pacific Education Office (APEO), has responsibility for education for the Assemblies of God area that extends nearly 10,000 miles east to west from French Polynesia to China and 7,000 miles north to south from Japan to New Zealand, an area with 50% of the earth's population. APEO consists of three divisions: The Bible School Division, ICI University Division, and the Church Ministries Division. APEO has five offices in Guam, Indonesia, Japan, Philippines and Thailand to facilitate the work of the three divisions. Ben, ICI University Coordinator, works with the two other APEO divisions to integrate the ministry of ICI with Bible schools and Church ministries throughout the Asia Pacific. Field-based personnel assist in fulfilling responsibilities. Since 1967, more than nine and one half million students have enrolled in ICI University (a) Evangelism Courses, (b) Christian Life Courses, (c) Christian Service Courses, and (d) Bachelor's Degree Program and Master's Degree Program. ICI students represent 160 nations speaking 109 languages.

Thanks Dr. Terrence H. Overlock, Sr.

Terry customized Branson's "Schooling Models of the Past, Present, and Future" to co-create A Multi-Year Plan for the Use Utilization of Multimedia Technology at Northern Maine Technical College. NMTC has collaborative relationships with 36 school districts in the northeast one-third of Maine. Terry's project holds potential to develop the infrastructure to co-create a borderless and seamless solution based learning paradigm for learners of all ages in that part of the state. Terry shared his progress through practicums in ERIC (Dec 7 memo). In ecrs, he shared with us his use of Electronic Library. THANKS DR. OVERLOCK.

Syllabus Top 20 Education Sites Featured on SyllabusWeb

A list of useful sites on the Internet has been compiled by the editors of Syllabus Press. Twenty sites were chosen for their comprehensiveness as well as their relevance for educators in high schools, colleges, and universities. The list will be maintained and updated on an ongoing basis, and submissions are welcome via SyllabusWeb. Access with the URL http://www.syllabus.com.

•CAUSE
http://cause-www.colorado.edu
Useful references on the management of information resources in higher education.

•Chemistry Hypermedia Project
http://www.chem.vt.edu/chem-ed/vt-chem-ed.html
Tutorials on a variety of chemistry topics.

•Chorus: Academic & Educational Computing in the Humanities
http://www.peinet.pe.ca:2080/Chorus/home.html
A resource for academic technologies in the Arts/Humanities.

•College and University Home Pages
http://www.mit.edu:8001/people/cdemello/univ.html
A very comprehensive listing of Web sites maintained by colleges and universities.

•Department of Education
http://www.ed.gov/
News and resources for education including full text of many DOE publications.

•Digital Dozen
http://www.enc.org/ddoct.html
A monthly listing of new and fascinating resources for math and science teaching.

•Distance Learning on the Net
http://www.interaccess.com/users/ghoyle/
A directory of resources on distance learning.

•Education listservs
http://www.clark.net/pub/listserv/lsedu1.html
A very comprehensive listing of subscription e-mail lists for education.

•Global Campus
http://www.csulb.edu/gc/
A wide range of free curriculum materials including images, sounds, text, and video to be used for nonprofit educational purposes.

•HEPROC
http://www.digimark.net/educ/WWW/index.html
Forums and resources for faculty and students.

•Institute for Academic Technology Home Page
http://www.iat.unc.edu/
Information on workshops, seminars, publications, videos, and software.

•Instructional Technology Connections
gopher://ccnucd.cudenver.edu/h0/UCD/dept/edu/IT/ryder/itcon.html
A good list of Internet resources on the use of technology in education.

•Internet College Exchange (ICX)
http://www.usmall.com:80/college/
A resource to look up basic information on more than 5,000 institutions in the U.S. and territories.

•London Times Higher Education Page
http://www.timeshigher.newsint.co.uk/
Trends and resources covering UK and European higher education.

•Peterson's Education Center
http://www.petersons.com:8080/
Secondary schools, vocational and technical schools, colleges and universities, graduate and professional schools, executive management programs, distance learning, and career information.

•Science Data and Image Resources
http://www.enc.org/data_images.html
A list of images and data, as well as curriculum materials related to the sciences. Includes planet and space images, biological images, gems and minerals, and weather images.

UCI Science Education Programs Office
http://www-sci.lib.uci.edu/SEP/SEP.html
A comprehensive list of science & mathematics curriculum resources available on the Internet/WWW.

•WebMuseum
http://www.emf.net/louvre/
A global list of museum resources on the Web.

•World Lecture Hall
http://www.utexas.edu/world/lecture/
Listings of faculty use of the Web by discipline, from accounting to zoology.

•WWWEDU Home Page
http://k12.cnidr.org:90/wwwedu.html
An unmoderated discussion on the use of the WWW in education.

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Bits & Bytes

Syllabus is free: Syllabus Magazine, Subscription Services, 1307 S. Mary Ave., Suite #211, Sunnyvale, CA 94087-3018.

T.H.E. Journal is free: 150 El Camino Real, Suite 112, Tustin, CA. Tel: 714-730-4011 FAX: 714-730-3739.

You could be eligible for **LAN TIMES**. Contact P.O. Box 652 in Hightstown, NJ 08520-0652.

You could be eligible for **NETWORK COMPUTING**. Contact P.O. Box 1095 in Skokie, IL 60076-9662.

You could be eligible for **BEYOND COMPUTING**. Contact P.O. Box 3014 in Northbrook, IL 60065-9984.

Or, **Communications Week**, P. O. Box 1094, Skokie, IL 60076. Tel: 708-647-6834. FAX: 708-674-6838.

Or, **Interactive Age**, P.O. Box 1194, Skokie, IL 60076-8194.
Or, **INFO WORLD**, P.O. Box 1164, Skokie, IL 60076-8164.
Or, **PC WEEK**. P.O. Box 10635, Riverton, NJ 08076-5035.
Or, **INFORMATION WEEK**, 600 Community Drive, Manhasset, NY 11030. Tel: 516-562-5000. FAX: 516-562-5036.

Or, **SOFTWARE MAGAZINE**, One Research Drive, Westborough, MA 01581, Tel: 508 366.2031. FAX: 508-836-4732.

The Chronicle of Higher Education - Information Technology
Nov 24 "High-Tech Efficiency" on p A17.
Dec 8 "Making Connections" on p A21.
Dec 15 "Campuses in Cyberspace" on p A19.
Jan 19 "Information Technology Resources" on p A23.

CAUSE Prof Paper #13: Organizational and Technological Strategies for Higher Education in the Information Age.
303-939-0310 or gopher://cause-gopher.colorado.edu

"The Year of the Internet," Newsweek, January 2, 1996.

Information about **Electronic Commerce World '96**

Conference Management	Conference Sponsor
Ruzek O'Malley Burns	EDI World
52 Church Hill Road	2021 Coolidge Street
Newtown, CT 06470	Hollywood, FL 33020-2400
1-800-248-2317	1-800-336-4887

The January issue of **EDI WORLD** is on "Automating Healthcare Procurement" form point of entry to procurement.

Future ecrs: Feb 18 and Mar 3 & 17 in Classroom 12 at 8:00 p.m. Eastern Time (type ecr 12 after the UNIX prompt).

SUSTAINING LEARNING COMMUNITIES

Vol. 2, No. 4, February 1996

* * * * * * * * * *

CREATIVE ORGANIZATIONAL PROTOTYPES

> I believe that there exists a possibility for a type of organization so fundamentally more creative than the traditional, authoritarian hierarchy that it is only dimly reflected even in the most successful current practitioners of new management principles.

Peter Senge. Sloan School of Management, Massachusetts Institute of Technology.

* * * * * * * * * *

CO-CREATING LEARNING COMMUNITIES AND ENTERPRISES

One ultimate purpose of graduate and postgraduate programs is to prepare the critical mass of intellectual capital to lead communities and enterprises through processes to co-create a desirable future with a preferred quality of life standard. Research and development creates advances in science and technology that can lead to improved quality of life. Advances in science and technology are (a) becoming more complex, (b) increasing at a faster rate and (c) fundamentally restructuring work. Ponder your youngster asking you to (a) define technology, (b) describe a chip, (c) discuss digital, (d) explain multi-media, and/or (e) talk about smart card and wireless technology. Or, imagine your teenager asking you to describe what it will be like in a virtual factory, virtual hospital, or virtual college in

New worlds will open through computers and television sets. Some people will access the world's leading medical specialist, some people will access high quality education and training programs, and some people people will order their favorite pizza from hundreds of channels by merely touching their TV. The bill to overhaul telecommunications will let local and long-distance cable companies compete.

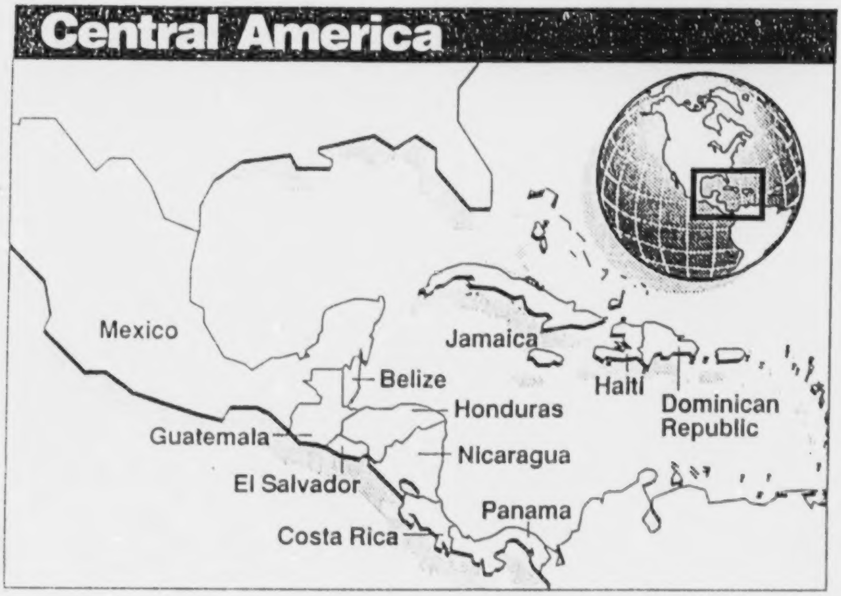
The ultimate purpose of results oriented education is **WORLD CLASS LEARNING** to produce **HIGH PERFORMANCE WORKERS.** How well are we prepared for the waves of modernization and restructuring? How should we re-engineer education?

Rethinking for Restructuring and Revitalizing

ABC Global wants to expand into the Big Emerging Markets (BEMs) in Africa, Central and South America, Pacific Rim countries, and the Commonwealth of Independent States. ABC anticipates expanding a few existing plants in the U.S. and building new plants "off shore." The long range plan could create thousands of new jobs that will improve the quality of life of people and communities. ABC will fund up to 50 $250,000 one year planning grants to develop strategic plans to create new learning systems to produce **High Performance Learner Workers**. ABC could fund 8 to 10 plans for an average of $2 million per year for five years to implement creative plans. Or, ABC could create its own HRD system.

A summit was held for the governors of the five states in which ABC plants are located. The Request for Proposals (RFP) was sent to governors of other states and Heads of State in other countries. ABC would prefer to locate one or two models in your state where its home office is located. One governor has already informed all public education that budgets will be reduced 10% next fiscal year. Institutions can qualify for half of that 10% through their five year strategic plan focused on re-engineering through technology. Alliances of communities with K-16 education collaboratives can compete for the other half of the 10%. That could be the "match" for an ABC implementation grant. Your Governor told your leader to designate institution(s) to compete for planning grants. YOUR institution has been selected.

Strategic planning is a Human Resources Development strategy for co-creating alternative scenarios of the future and then converting a preferred scenario to a multi-year action plan. The HRD strategy consists of an audit of internal variables and an assessment of external variables to create a VISION. Education has been slow to adopt strategic planning and too often is not fully committed to it as an HRD strategy. Some members of the Council of Independent Colleges participated in two projects in the 1970s that included market analysis and program review based on centrality, quality & viability. A dissertation completed in 1991 indicated that most states and two-year colleges had no program review process mandate. Most program review processes that did exist, had no mandate for assessment of economic and technological variables. How can colleges and schools modernize unless leaders and policy makers commit themselves and their institutions to intense analysis about the impact of technology on society and work? How can academic program developers and service providers envision alternative HRD delivery systems unless they become understand and use instructional technology? How can consumers and service providers understand continuous voice activated wireless technology unless they experience/use it? How would you co-create a community-education collaborative?


Central America
Mexico
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Haiti
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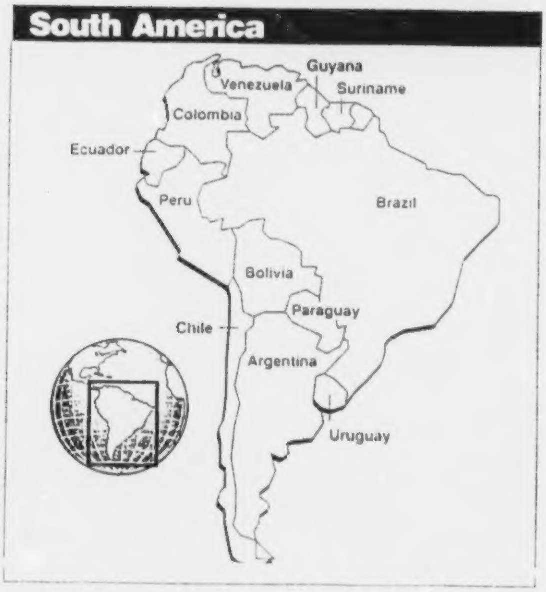
Nicaragua
El Salvador
Panama
Costa Rica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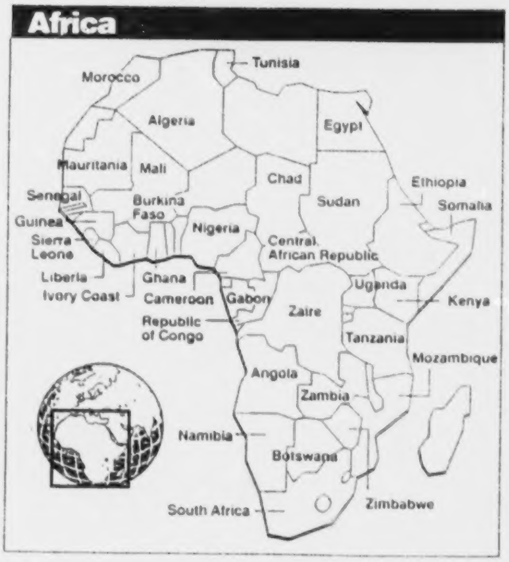
Uruguay


Africa
Tunisia
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Algeria
Egypt
Mauritania
Mali
Chad
Ethiopia
Senegal
Burkina Faso
Sudan
Somalia
Guinea
Nigeria
Sierra Leone
Central African Republic
Liberia
Ghana
Uganda
Ivory Coast
Cameroon
Gabon
Kenya
Zaire
Republic of Congo
Tanzania
Mozambique
Angola
Zambia
Namibia
Botswana
South Africa
Zimbabwe

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Cognitive Sciences and Communications Systems

New world class Human Resources Development (HRD) systems, preschool through graduate school, must be co-created to produce the **KNOWLEDGE WORKERS of the 21 CENTURY.** Your CEO and Board have appointed you chair of the Strategic Planning and Budgeting Committee to compete for an ABC Global grant. How will you co-create a STRATEGIC PLANNING process to form learning communities and enterprises? What resources can be used in community-school-college-university collaboratives?

Learning styles are an indicator of how people prefer to intake information and planning preferences are an indicator of how people most often think about using the information. The guidelines yielded 74 participants with preferences and styles on the attachment. These characteristics are one aspect of the "art" of planning (ED 298 977). How will you use aspects of the art and science of strategic planning? What committees and structure will you recommend to a SPBC? How would you propose dealing with curriculum competencies and standards? How would you propose raising the level of awareness about contemporary technology?

Research has indicated that standards are essential to achieve quality. Curriculum competencies were specified in mathematics, science, history, arts, civics, geography, and English. In addition, competencies were specified in 22 occupational areas. The Bioscience Industry Skill Standards Project was coordinated by the Center for Education, Employment, and Community in Newton, MA. The Graphic Communications Skill Standards Project was coordinated by the Graphic Arts Technical Foundation in Pittsburgh, PA. These projects and others are in New Habits (ED 384 993).

The Coalition of Networked Information (CNI) was formed in 1990 "To advance scholarship and intellectual productivity." CNI is comprised of the Association of Research Libraries (ARL), CAUSE, and EDUCOM. ARL produced Strategy for the 1990s (1991). CAUSE Strategic Plan: A Working Paper for the Future (1995) begins with "Transformation Through Information Resources: Technology, Services, & Information" and concludes with "Strategic Directions for CAUSE." CAUSE and EDUCOM co-sponsor professional development activities including an "Information Technologies Workshop for Small Colleges" with the Council for Independent Colleges in Pittsburgh on Mar 27-29. CNI created the Higher Education Information Resources and wrote "HEIRAlliance Evaluation Guidelines for Institutional Information Resources" (1995). The Association for Institutional Research (AIR) for management research, policy analysis, and planning deal primarily with use of data for planning and research.

How will you recommend the creation of genuine alliances? What is the scope of work? What are the time lines?

KOLB LEARNING STYLE

ACCOMODATOR
23

CONCRETE
EXPERIENCE

DIVERGER
11

1	5	1	4
3 ACTIVE	14	5	3 REFLECTIVE
EXPERIMENTATION 6	8	4	OBSERVATION 0
4	9	5	4

CONVERGER
27

ABSTRACT
CONCENTRALIZATION

ASSIMILATOR
13

MYERS BRIGGS PLANNING STYLE

PRAGMATIC MANAGER

STRATEGIC MANAGER

3	4	3	5
4	7	10	9
1	1	10	8
2	0	3	4

PRAGMATIC HUMANIST

STRATEGIC HUMANIST

"Keystone" States of Heart and Mind

Conceptual frameworks of visions of a future are essential. Perspectives on the Education and Training System of the Future provided a few insights about alternative education, as did The Learning Community of the Future (ED 280 538). "Info Era Learning Communities of the Future" led to four classifications of education restructuring (a) contemporary traditional education, (b) partial technological/technology intensive, (c) collaborative lifelong learning, and (d) problem/solution based learning. A problem/solution based learning environment is intended to produce lifelong high performance learners and workers by placing more emphasis on critical thinking and problem solving (ED 352 126, 372 239).

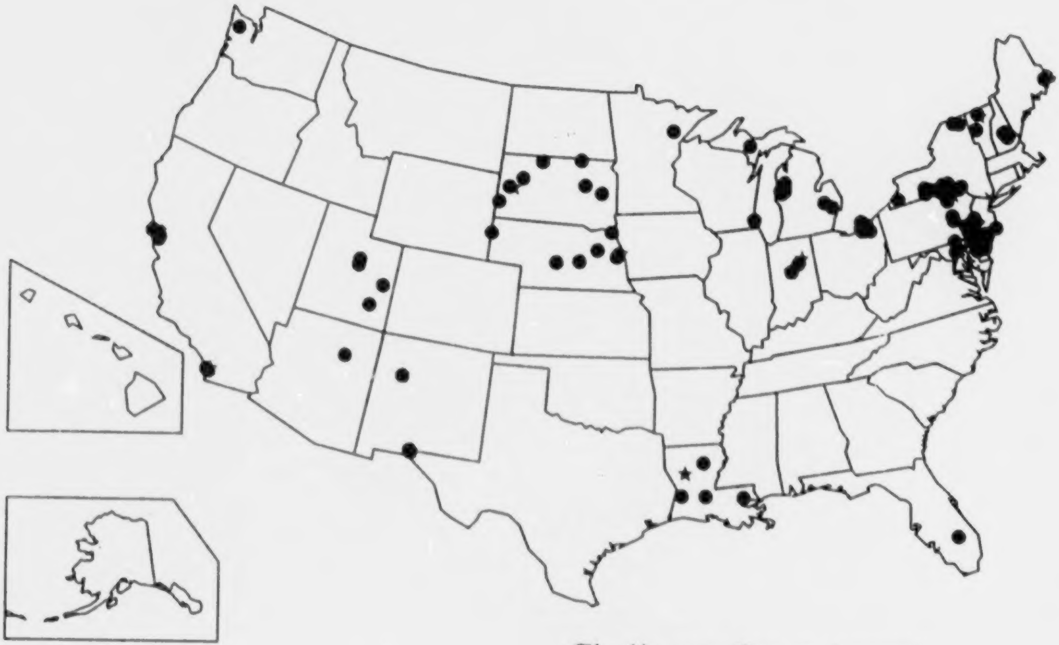
Scout programs are examples of problem based learning. Problem based learning was a conceptual framework developed by McMaster University School of Medicine in Ontario, Canada, about 30 years ago. About 10 universities in the U.S. have adopted problem based learning. The John A. Burns School of Medicine at the University of Hawaii was the first school to convert entirely to the new system. Others, including Harvard Medical School, offer a choice of traditional or problem based tracks or a hybrid of the two. The World Health Organization published an evaluation of the 10 schools using problem-based learning. Problem solving skills and retention of medical students increased in the alternative problem based educational format (ED 361 531).

Design of 21st Century learning enterprises will accelerate via the **Challenge Grants for Technology In Education.** Last October President Clinton announced the first wave of a five year program. Awards to 19 communities will impact on 134 other school districts in 23 states. The $9.5 million in grants will be matched with more than $70 million in the first year and over $300 million during the five-year time. How will you co-create a conceptual framework for a solution-based learning enterprise? How will you co-create, with stakeholders, a technology based delivery system?

Assessment of demographic, social, economic, technological, and government variables is essential. How do you envision technological advances over the next few years?

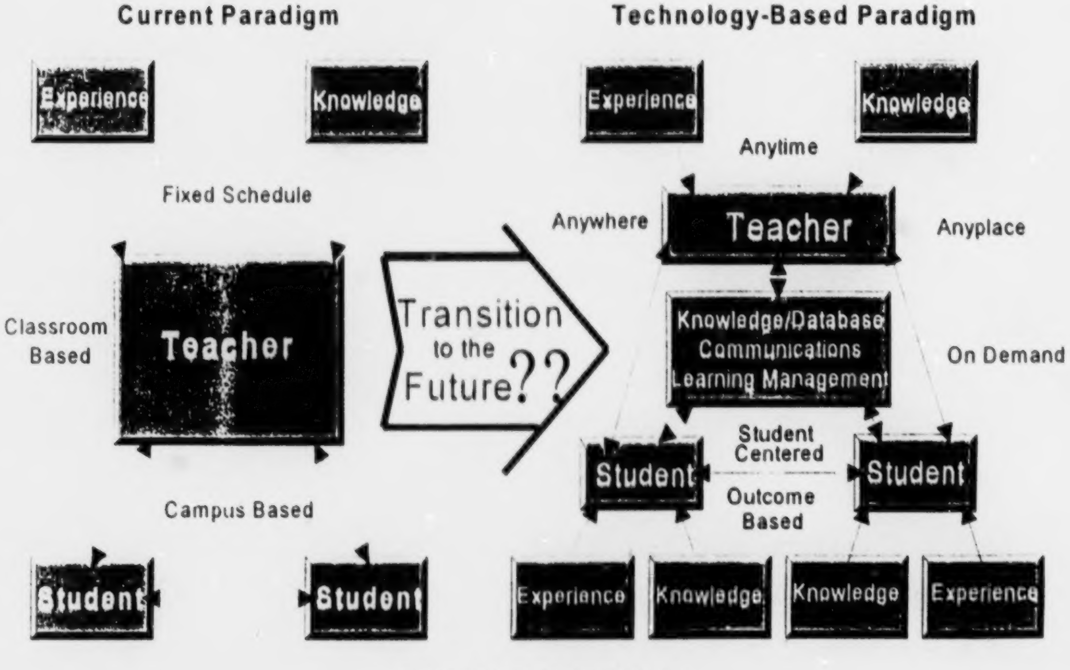
	1996	1997	1998	1999	2000
Asychronous Transfer Mode					
Cellular and Wireless					
Desktop Conferencing					
Distributed Digital Video					
High-End Portables					
Mobile Computing Solutions					
Smart & Voice Activated Techs.					
Workgroup Collaboration					

How will you lead a SPBC through VISIONS to an **ACTION PLAN?**



Challenge Grant Awards

● 134 Partner School Districts
★ 19 Challenge Grant Districts



Current Paradigm
Technology-Based Paradigm
Experience
Knowledge
Fixed Schedule
Classroom Based
Teacher
Campus Based
Student
Student
Transition to the Future??
Experience
Knowledge
Anytime
Anywhere
Teacher
Anyplace
Knowledge/Database Communications Learning Management
On Demand
Student
Student Centered
Student
Outcome Based
Experience
Knowledge
Knowledge
Experience

CHANGING PARADIGMS

Overlock, T H (1995) Development of a multiyear plan for the integration of technology into the learning environment at Northern Maine Technical College Fort Lauderdale, FL Unpublished major applied research project, Nova Southeastern University

Note Adapted from Branson, R K (April, 1990) Issues in the design of schooling Changing the paradigm Educational Technology, 30, 7-10

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One Dupont Circle and National Organizations

One Dupont Circle is sometimes referred to a power tower. The building is the home office for organizations such as

AACC	Am Assoc of Community Col, Suite 410	202-728-0200
AACN	Am Assoc of Col of Nursing, S 530	-463-6930
AACTE	Am Assoc of Col of Tch Ed, S 610	-293-2450
AAHE	Am Assoc of Higher Ed, S 360	-293-6440
AASCU	Am Assoc of State C & U, S 700	-293-7070
AAUP	Am Assoc of U Professors, S 500	-737-5900
ACE	Am Council on Education, S 800	-939-9300
	Am C on Ed Library & Info Service, S 640	-939-9405
ACT	Am College Testing, S 340	-223-2318
AAU	Assoc of American Universities, S 730	-466-5030
ACCU	Assoc of Catholic C & U, S 650	-457-0650
AGB	Assoc of Governing Boards, S 400	-296-8400
CGS	Council of Graduate Schools, S 430	-223-3791
CIC	Council of Independent C, S 320	-466-7230
COGR	Council on Govtal Realtions, S 670	-861-2595
COPA	Council on Postsec Accreditation, S 305	-452-1433
ERIC/HE	ERIC Clearinghouse on Higher Ed, S 630	-296-2597
ERIC/SP	ERIC Clearinghouse on Tech Ed, S 610	-293-2450
NACUA	Nat Assn C & U Attorneys, S 620	-833-8390
NACUBO	Nat Assn C & U Business Officers, S 500	-861-2500
NASULGC	Nat Assn SU & Land Grant Colleges, S 710	-778-0818
NCURA	Nat Council of U Research Admin, S 420	-466-3894
NUCEA	Nat U Continuing Ed Assn, S 615	-659-3130

Addresses for ARL, CAUSE, EDUCOM, and AIR are as follows:

ARL
1527 New Hampshire Avenue
Washington, D.C. 20036
Tel: 202-296-2296
FAX: 202-462-7849

CAUSE
4840 Pearl East Circle, 302E
Boulder, CO 80301
Tel: 303-449-4430
FAX: 303-440-0461

EDUCOM
1112 16th St, NW, S 600
Washington, DC 20036
Tel: 202-872-4200
FAX: 202-872-4318

AIR
314 Stone Building
Tallahassee, FL 32308-3036
Tel: 904-644-4470
FAX: 904-644-8824

National School Boards Association
1680 Duke Street
Alexandria, VA 22314
Tel: 703-838-6213

The National Parent Teacher Association
2000 L Street, NW, Suite 600
Washington, DC 20036
Tel: 202-331-1380

American Vocational Association
1410 King Street
Alexandria, VA 22314
Tel: 703-683-22314

Major Applied Research Projects

Kenred Christian is nearing the completion of his report The Development of a Model for an Open Learning System at the University of Technology, Jamaica. The College of Arts, Science, and Technology (CAST) set an objective to establish an open learning center in its third Development Plan in 1991. CAST was granted university level status and renamed the University of Technology, Jamaica (UTech) in September 1995. The project was prompted by UTech's need to make its programs more accessible; to achieve greater quality, cost-effectiveness, and flexibility in program delivery; and to provide opportunity for students to accept more responsibility for their own learning. Kenred interviewed UTech academic department heads and obtained information about distance education from institutions in Canada and the U.S. The major finding was that in developed and developing countries alike, open learning approaches are being used with increasing frequency, to achieve greater accessibility, quality, and flexibility in the delivery of postsecondary education. The pilot program between UTech and the Building Societies Association of Jamaica helped to usher in a new era in education in Jamaica and the Caribbean. As head of the Commerce Department, Kenred has can improve the lives of many people in the Caribbean.

Shirley Waterhouse has submitted A Proposed Strategic Plan to Implement Faculty Educational Technology Resources at Embry-Riddle Aeronautical University to the Summative Committee. President Steven Sliwa stated in the plan **"We must devise strategies to respond to continuous change. Academic leaders should reinforce a climate in which faculty members have options for developing the learning and teaching environment. It is likely that institutions which are unsuccessful at creating this environment will be at a severe competitive disadvantage within a decade. Catching up will be virtually impossible."** Shirley is synthesizing the feedback into her major applied research project report.

The strategic plan was developed using several procedures. Eight ERAU faculty member representatives from the Daytona Beach, Prescott, and Extended Campus helped with the plan. Last November, 149 faculty from the three campuses completed a survey on educational technology. An extensive literature review of 200 sources of information was done on educational technology, change, leadership, learning communities, strategic planning, and student-centered learning. ERAU is uniquely suited for distance learning due to a world-wide presence in 114 centers and unique aviation curriculum. Dr. Chong-Sun Hong completed An Action Plan for the Use of Innovative Approaches in English Education at Hankuk Aviation University (South Korea) last year. Could ERAU and HAU form an alliance sometime in the future on English education and some of the unique aviation curriculum?

Bits & Bytes

Read "Your Child's Brain" by Sharen Begler in Newsweek, Vol. CXXVII, No. 8, February 19, 1996, pp. 55-62.

ENIAC 50th Celebration, the anniversary of the founding of the computer at the University of Pennsylvania, is a series of year-long activities and events for the nation and world. Vice President Al Gore, Mr. Superhighway, is the honorary chairman. ENIAC 50th Celebration is coordinated by a group of academic, industry, and professional associations led by James A. Unruh, chairman and chief executive officer of Unisys; Judith Rodin, president, University of Pennsylvania; and Mayor Edward Rendell. Following a Gala Dinner on Feb 14 you can participate in an Internet Public Opinion Survey by ACM (The First Society in Computing). Information about the ACM Computing Week '96: Tel 212-626-0531, FAX 212-944-1318. (Also: http//www.seas.upenn.edu/ & http//www.acm.org). The University of Pennsylvania has symposia on May 13 & 14: "Impact of Computers & Info Mg" - Jerry Ward 215-898-8267. "Creative Mind in the Info Age" - Ms. Stevens 215-898-7320. **ENIAC - Electronic Numerical Integrator and Computer.**

"Personal Computer and Workstation Technologies" articles are in the Feb issue of **Syllabus**:

- News, Resources, and Trends;
- Desktop Computers and Workstations for 1996: A Survey;
- Mobile Computers and Desktop Peripherals Buyer's Guide;
- Case Studies: Technology Across the Campus;
- Columns on Multimedia, Administrative Technology, On the Internet (Best Tools for Searching) & Quantitative Tools;
- Guide to Education Technologies

Syllabus is free: Syllabus Magazine, Subscription Services, 1307 S. Mary Ave., Suite #211, Sunnyvale, CA 94087-3018.

The Chronicle of Higher Education - Information Technology
Feb 2 "The Visible Man: A Cadaver in Cyberspace" on p A6
"Self Paced Studies" on p A19
"Modern Day Monastery" on p A21
"Information Technology Resources" on p A21

- Miami U, Journal of Excellence in College Teaching
- U of Missouri at Columbia, General Assembly bills
- U of NC at Chapel Hill, electronic library
- MacArthur Fdn, grant application, program policies
- State of Iowa, business resources, govt agencies
- State of PA, econ dev plans, state tech initiatives
- US House of Rep, Comm on Econ & Edal Opportunities (Rep William F. Goodling, Chair, former supt in PA)

Ecrs are scheduled for Mar 3 & 17, Apr 14 & 28, May 19, and June 2 & 23 at 8:00 Eastern Time in Classroom 12.

These newsletters may not be produced in March and April because of several other activities and projects.

SUSTAINING LEARNING COMMUNITIES
Vol. 2. No. 5, March 1996

* * * * * * * * * *

We must be the change we wish to see in the world. --Ghandi

* * * * * * * * * *

TELECOMMUNICATIONS DEREGULATION IS COMPARABLE TO THE DEATH OF COMMUNISM IN RUSSIA

The editorial by John Dodge in the February 5, 1996, (p. 3) issue of PCWEEK comments on standing on the "brink of a revolution" with cheap cable, phone, and data bills; consolidation of bills and services; more service than we ever thought possible; competition where none had existed; a mad scramble to buy or produce content; and a boom to the thousands of companies in the communications industry...." How we benefit from the Telecommunications Deregulation Act depends on how the Federal Communications Commission writes the more than 80 rules. One of the most difficult rules is how the Bell companies will be free to provide long distance service outside the local phone territories. The law deals with a number of subjects such as making sure that telephone service is available to **ALL AMERICANS**. One of the other rules deals with the discounted rate companies must provide to education and libraries for access to telecommunications.

Then there is the maze of statutes in each state that will be carefully analyzed. Act 1993-67 amended Title 66 of the Pennsylvania Consolidated Statute provides for an "Alternative Form of Regulation of Telecommunication Services." The bill contains a network modernization plan with the following statement "Each local exchange telecommunications company shall commit to universal broadband availability and shall commit to converting 100% of its interoffice and distribution telecommunications network to broadband capability by December 31, 2015." The language goes on to include "fiber optic trunk lines and integrated services digital network."

Where in a curriculum should these things be included? How should Human Resource Development programs be designed and implemented? What are the implications for strategic planning for administrative and curricular purposes? Does this have any relation to Electronic Commerce, technology transfer, and economic development (JOBS)? What are the implications for Bell Atlantic, Ford Electronics, McNeil Pharmaceutical, Unisys, and other corporations in terms of domestic and international competition? What are the implications to **CREATE LEARNING COMMUNITIES** to adjust to the new realities of the 21st Century?

Rethinking for Restructuring and Revitalizing

Strategic rethinking includes analysis of the internal and external environments to co-create visions of the future. Variables are mission, programs, people, and technology. Most educational institutions have a mission statement that contains statements about equal access to quality programs. Educational institutions design and implement programs via people who use technology and know-how to achieve goals.

Most students receive report cards that contain scores to indicate levels of performance. Many states have adopted "report cards" of institutional effectiveness. Some report cards are an accumulation of student scores for each school within a district or for each college campus within a system or some "peer" group. The Pennsylvania System of School Assessment includes scores on the Scholastic Aptitude Test (ACT), the Stanford Achievement Test, and the McCaig Writing Evaluation Scale. The SAT contains both a math score and a verbal score. National average and PA scores are noted on the chart below with space to indicate a preferred goal.

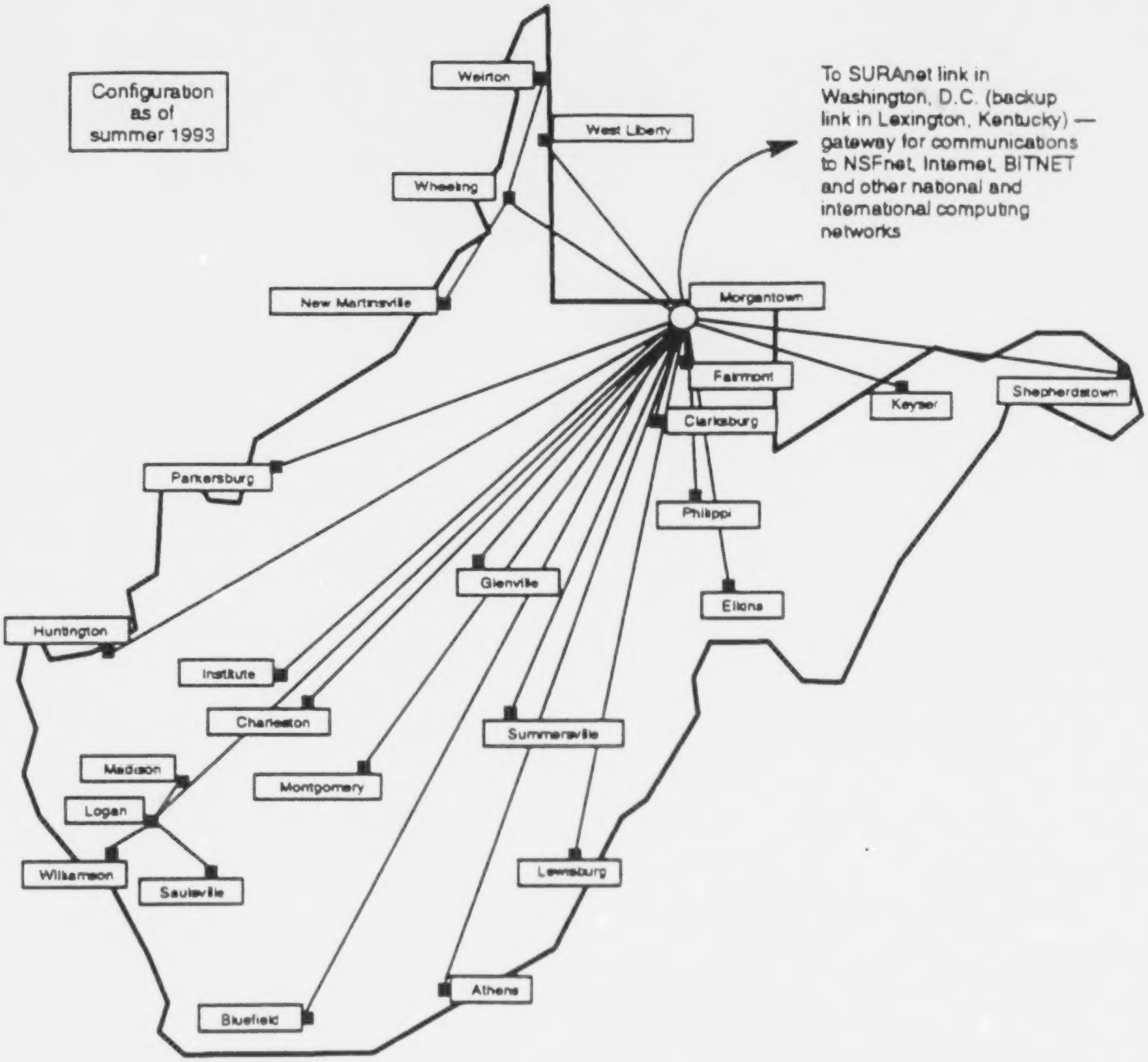
		1994	1995	1996	1997	1998	1999
Math -	National	479	482				
	PA	462	461				
	Sch Dist						
	A School						
Verbal -	National	423	428				
	PA	417	419				
	Sch Dist						
	A School						

Scores vary among students within a school, among schools within a district or campuses within a system, and among colleges and universities within a state-wide system. There can be great variation in student scores, particularly for English as a second language students.

The National Assessment for Educational Progress (NAEP) indicates that only in four states do 25% of eighth grade students achieve minimum math proficiency (ND, IO, NE, MI). Even in the best states, 75% of the students are not math proficient. The percentage of some states is as follows:

		All	White	Black	Hispanic	Asian
PA ranks	12th	19.1	21.8	3.5	2.5	N/A
MD "	16th	17.1	23.6	3.1	4.6	50.3
OH "	20th	15.6	17.6	1.4	2.3	N/A
WV "	30th	9.8	10.3	2.7	2.3	N/A

Bell Atlantic and the WV Department of Education launched WORLD SCHOOL so educators can integrate telecommunications and collaborative learning (304-558-0304). Colleges and universities are networking in WV (see diagram). How can greater equality and quality be achieved within traditional schools and in re-engineered environments via technology?


Weirton
West Liberty
Wheeling
New Martinsville
Morgantown
Fairmont
Clarksburg
Keyser
Shepherdstown
Parkersburg
Philippi
Glenville
Elkins
Huntington
Institute
Charleston
Summersville
Madison
Montgomery
Logan
Williamson
Saulsville
Lewisburg
Athens
Bluefield

Configuration
as of
summer 1993

To SURAnet link in Washington, D.C. (backup link in Lexington, Kentucky) — gateway for communications to NSFnet, Internet, BITNET and other national and international computing networks

Athens	Concord College
Bluefield	Bluefield State College
Charleston	State College and University Systems of West Virginia Central Office, Charleston Area Medical Center, West Virginia Board of Education, West Virginia Library Commission, West Virginia Information Systems & Communications
Clarksburg	Clarksburg Campus of Fairmont State College
Elkins	Davis and Elkins College, Department of Natural Resources
Fairmont	Fairmont State College, Fairmont State Library
Glenville	Glenville State College
Huntington	Marshall University
Institute	West Virginia State College, West Virginia Graduate College
Keyser	Potomac State College
Lewisburg	West Virginia School of Osteopathic Medicine
Logan, Madison, Saulsville, Williamson	Southern West Virginia Community College
Montgomery	West Virginia Institute of Technology
Morgantown	WVNET Central Site, West Virginia University, Software Valley Corporation, MPL Inc., West Virginia Geological Survey
Parkersburg	West Virginia University at Parkersburg
Philippi	Alderson–Broaddus College
Shepherdstown	Shepherd College
Summersville	Summersville Campus of Glenville State College
West Liberty	West Liberty State College
Wheeling, Weirton, New Martinsville	West Virginia Northern Community College

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Cognitive Sciences and Communications Systems

New world class Human Resources Development systems will be required to produce a critical mass of intellectual capital and high performance learners and workers for the new era. The February issue of Technology Times has numerous articles that point to "New Habits of Heart and Mind" to be learned from the Cognitive Sciences and Communications Systems.

The Eastern Technology Council (ETC) received a $1 million grant from the PA Department of Commerce to establish its Pennsylvania Technology Transfer Center (PTTC). ETC will operate the PTTC from its center in Wayne (610-975-9471). The National Technology Commercialization Network, the PTTC and similar projects will accelerate the rate of change.

Unisys Corp. received a $12.8 million systems integration contract by Spain's Ministry of Labor and Social Security to provide hardware, software, and services in support of a social security identification card project known as TASS. Unisys is one of the top three providers of commercial information services and technology with solutions at work in the U.S. federal government, all 50 state governments, and more than 1,500 government agencies worldwide.

Editor David Schmidt wrote an outstanding article entitled "The Possibilities of an Electronic Economy." He states, "Science fiction writers have dreamed about an electronic economy for decades. But one thing is certain - it will come." He notes that electronic funds transfer and other activities have been a reality for some time through private networks. The Air Force has its entire worldwide pay system online so that clerks anywhere can work in real time with the master computer in Denver. He cites several companies and services that are promoting electronic commerce.

The Technology Council of Central Pennsylvania will address the number one concern among members -- finding quality technical employees. The Council will help training managers and human resources professionals learn how to keep employees up-to-date technologically with shrinking budgets through a conference on April 9 (Becker, 717-238-5333 x 24).

What are the policy implications in an era of accelerating technology transfer to modernize and restructure all sectors of the economy - agriculture, manufacturing, and services? What are the implications for strategic planning processes for "Building Communities and Neighborhoods?" How can education, particularly technology education from middle through undergraduate levels, form strategic alliances to prepare high performance learner workers and reduce the inequality in the contemporary traditional delivery systems? How can we co-create HRD systems to deliver high quality programs for culturally diverse people "just-in-time?"

NATIONAL TECHNOLOGY COMMERCIALIZATION NETWORK

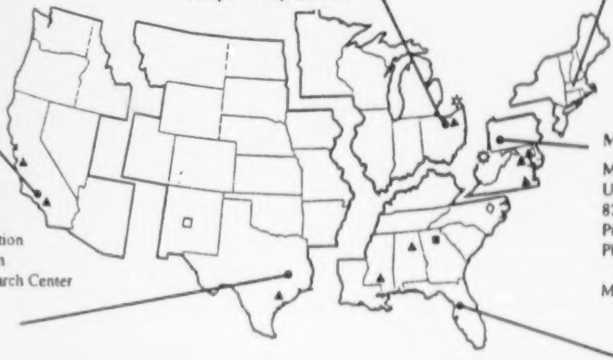
NASA REGIONAL TECHNOLOGY TRANSFER NETWORK

In order to provide technology product for the market, the RTTCs have used intensive technically focused personal interactions with the NASA Centers. The Northeast RTTC has channeled the majority of its resources to pursue NASA technology commercialization through a "market pull" approach.

FAR WEST RTTC
Far West Technology Transfer Center
University of Southern California
3716 South Hope Street, Suite 200
Los Angeles, CA 90007-4344
Ph.: (213) 743-6132 (local)
(800) 642-2872 (CA only)
(800) 872-7477 (national)
Dr. Robert L. Stark, Director

MID-WEST RTTC
Battelle Memorial Institute
Great Lakes Industrial Technology Center
25000 Great Northern Corporate Center, Suite 450
Cleveland, OH 44070
Ph.: (216) 734-0094
Dr. Joseph W. Ray, Director

NORTHEAST RTTC
Center for Technology Commercialization
Massachusetts Technology Park
100 North Drive
Westborough, MA 01581
Ph.: (508) 870-0042
(800) 472-6785 (MA only)
Dr. William Gasko, Director



MID-CONTINENT RTTC
Texas Engineering Experiment Station
The Texas A&M University System
237 Wisenbaker Engineering Research Center
College Station, TX 77843-3401
Ph.: (409) 845-8762
(800) 472-6785
Mr. Gary Sera, Director

MID-ATLANTIC RTTC
Mid-Atlantic Technology Applications Center
University of Pittsburgh
823 William Pitt Union
Pittsburgh, PA 15260
Ph.: (412) 648-7000
(800) 257-2725
Ms. Lani S. Hummel, Director

SOUTHEAST RTTC
Southern Technology Application Center
University of Florida, College of Engineering
Box 24, One Progress Boulevard
Alachua, FL 32615
Ph.: (904) 462-3913 (local)
(800) 354-4832 (FL only)
(800) 225-0308 (national)
Mr. J. Ronald Thornton, Director

▲ NASA Field Centers
✡ National Technology Transfer Center (NTTC)
● Regional Technology Transfer Centers (RTTC's)
◇ Technology Applications Team
☐ Technology Applications Center (TAC)
■ Computer Software Management and Information Center (COSMIC)

NASA FIELD CENTERS

Ames Research Center
Office of Commercial and Community Programs
Mail Stop 223-3
Moffett Field, CA 94035-1000
Ph.: (415) 604-4044
Geoffrey S. Lee, Technology Utilization Officer

Goddard Space Flight Center
Office of Commercial Programs
Technology Utilization Office
Mail Code 702
Greenbelt, MD 20771
Ph.: (301) 286-6242

Jet Propulsion Laboratory
NASA Resident Office
Mail Stop 180-801
4800 Oak Grove Drive
Pasadena, CA 91109
Ph.: (818) 354-4862
Arif Husain, Technology Utilization Office

Johnson Space Center
Technology Utilization Office
Mail Code IC4
Houston, TX 77058
→ Ph.: (713) 483-3809
Dean C. Glenn, Technology Utilization Officer

Kennedy Space Center
Technology Utilization Office
Mail Stop PT-PAT-A
Kennedy Space Center, FL 32899
Ph.: (407) 867-3017
James A. Aliberti, Technology Utilization Officer

Langley Research Center
Technology Utilization and Applications Office
Mail Stop 200
Hampton, VA 23665-5225
Ph.: (804) 864-2484
Joe J. Mathis, Jr., Technology Utilization Officer

Lewis Research Center
Technology Utilization Office
Mail Stop 7/3
21000 Brookpark Road
Cleveland, OH 44135
Ph.: (216) 433-5568
Anthony F. Ratajczak, Technology Utilization Officer

Marshall Space Flight Center
Technology Utilization Office
Mail Code AT01
MSFC, AL 35812
Ph.: (205) 544-2223
Ismail Akbay, Technology Utilization Officer

Stennis Space Center
Technology Utilization Office
Mail Code HA30
SSC, MS 39529-6000
Ph.: (601) 688-2042
Robert A. Barlow, Technology Utilization Officer

National Technology Transfer Center (NTTC)
Wheeling Jesuit College
316 Washington Avenue
Wheeling, WV 26003
Ph.: (304) 243-2455
Mr. Lee J. Rivers, Executive Director

Technology Applications Center (TAC)
University of New Mexico
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Albuquerque, NM 87131
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Stanley A. Morain, Ph.D., Director

Technology Applications Team
Research Triangle Institute
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Research Triangle Park, NC 27709
Ph.: (919) 541-7202
Doris J. Rouse, Ph.D., Director

Computer Software Management and Information Center (COSMIC)
University of Georgia
382 East Broad Street
Athens, GA 30602
Ph.: (404) 542-3265
John A. Gibson, Director

TAPIN
A PROGRAM OF THE TRP

National Aeronautics and
Space Administration

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"Keystone" States of Heart and Mind

Leadership consists of analysis, visioning and action plans. Co-creation of alternative scenarios should change SYSTEMS. SYSTEMS consist of inputs, processes and OUTCOMES. Through the 1940s, research focused on inputs. During the 1950s and 1960s, research began to focus on processes. During the 1970s, research shifted to focus on the OUTCOMES -- OUTPUT of the enterprise with IMPACT on PERFORMANCE.

What is a good strategic planning model based on experience? Many models exist in the literature. Most models suggest a preliminary phase in which a commitment is made to "Plan to think strategically." Many institutions in the services sector of the economy have not planned strategically even through they use the language. Most institutions do not extrapolate advances of technology into the future and then interpret its meaning. Have you ever heard of a Strategic Planning & Budgeting Committee make a presentation about how technology could modernize or restructure education in the 21st Century? Imagine the HRD from a focus group discussion on the impact of asychronous transfer mode (ATM), cellular & wireless, desktop conferencing, distributed digital video, high-end portables, and other technologies.

The internal audit and external assessment are for the purpose of creating alternative scenarios. In a few years, the "haves" will be talking to a computer and it will be able to translate into several languages simultaneously. What are the implications for policy, programs, and HRD? Adult Literacy in America (1993) indicated that about half of the U.S. adult population demonstrate low literacy levels. Adult Literacy in Pennsylvania (1993) pinpointed prose, document, and quantitative literacy deficiencies. Technological literacy is even a more complex problem.

What are the implications for planning for rural America? The Center for Rural Pennsylvania completed an analysis and made five predictions (a) rebirth of rural communities; (b) work, but for less; (c) improved health care networks; (d) the saga will continue between poor and rich schools; and (e) re-emergence of Western PA. A prediction is that rural communities will grow because of suburban residents trying to escape higher taxes, crime, and congestion. Continuing growth in telecommunications could produce high paying and low paying jobs. An expanding number of hospital outreach clinics and tele-medicine could provide greater access to health care. Rural schools will continue to lag behind the wealthier suburban schools, but students may be taught via tele-teaching. The report states "To insure that their future is bright, rural residents need to work together to identify and plan for the type of community they want to pass on to their children." (The Center for Rural PA, 212 Locust St., Suite 604, Harrisburg 17101, PA, 717-787-9555).

BUILDING COMMUNITIES AND NEIGHBORHOODS

PRELIMINARY	EARLY FALL	LATE FALL	EARLY WINTER	LATE WINTER	SPRING
Plan to Think Strategically	Internal Audit	External Assessment	Alternative Scenarios	Preferred Scenario	Strategic Plan
Plan of Action					
Scope of Work		Demographic	Contemporary		1. Health
Levels of Analysis		Social	Traditional		
Org. Structure		Economic			2. Learning
Planning Room					
Materials		Establishments & Jobs (Workforce)			
Research					3. Culture
Data Books			Partial		
Communications		Technology	Technological		4. Work
Retreats					
Workshops - Technology		Global Change			
Format of Products			Technology		5. Arts
Focus on Creativity		Impact	Intensive		

STRATEGIC PLANNING & BUDGETING COMMITTEE

	INTERNAL SUBCOMMITTEES		EXTERNAL SUBCOMMITTEES
1.	Students & Clientele	1.	Demographic/Social
2.	Programs	2.	Economic: Establishments & Jobs
3.	Communications & Information Infrastructure	3.	Technology - Communications & Information
4.	Personnel	4.	Technology - Health & Human Services
5.	Physical Infrastructure	5.	Technology - Business & Industry
6.	Political & Funding	6.	Political & Funding

Practicums Leading to Major Applied Research Projects

James E. Barger, Coordinator of Business and Marketing Education for Virginia Beach City Public Schools (VBCPS), completed the CIT practicum Development of a Questionnaire for the Certified Network Administrator Course. Imagine the potential of a questionnaire that is developed and distributed electronically to employers throughout a service area. Employers could indicate anticipated and current upgrades and the competencies and skills necessary for high quality performance. Sounds like a few practicums. Then, ABC Global wants VBCPS and the community college to form an alliance for an articulated NETWORK training program that can be delivered to new plants in Pacific Rim countries. The design for the major applied research project are....

Young Gi Kim Chair of the Department of Computer Science at Inchon National University of Education (INUE), has completed an HRD practicum on the Development of a Guidebook for Computer Assisted Instruction and Courseware for Elementary School Teachers. Since 1988, the Korean Education Development Institute (KEDI) developed and distributed Computer Assisted Instruction (CAI) courseware and materials in all subjects for teachers. In 1992, the Ministry of Education began to encourage teachers to develop courseware and KEDI released a GRaphic Enhancement Authoring Tool (GREAT) that can be used by novices. The Guidebook contains sample programs for authoring CAI materials and is intended to be used by elementary teachers. The Guidebook is used in the course "Courseware Design and Development" to help pre-service and in-service teachers, K-8.
Young would welcome materials and resources.

Mr. Young Gi Kim
7-411 Kyung-Nam Apt.
Banpo-Dong, Secho-Ku
Seoul, KOREA 137-042
gikimy@fcae.acast.nova.edu
FAX: 82-32-541-0580

The above two individuals and others could create a focus group to pursue advances in science and technology. Members of the Learning Community on Technology and Its Impact could analyze the literature and have focus groups for many types of technology, to understand it and interpret the impact. Jim could interpret the results of the online discussions in terms of secondary school graduation requirements and the implications for an integrated approach to K-16 technology education. Young could interpret the results in terms of elementary and secondary education teacher pre-service and in-service programs. INUE has departments of math, science, practical art, and fine arts education. Practicums could be building blocks to major applied research projects (MARP) to online exchanges between students and teachers with the NASA Classroom of the Future, Astronomy Village, or Celebration. MARPs could include sessions like Highway Construction 101, Net Repair 102, and Global Messages 103 (ED 384 993).

TECHNOLOGY

	1996	1997	1998	1999	2000
Asynchronous Transfer Mode					
Audio Editing Packages					
Cellular					
C D Rom					
Desktop Conferencing					
Digital Video Everywhere					
Document Conferencing					
Integrated Services Digital Network					
Multimedia					
Personal Digital Assistant					
Smart Technologies					
Teleconferencing					
Videoconferencing					

RETHINKING FOR RESTRUCTURING AND REVITALIZING
NEW HABITS OF MIND AND HEART

HIGHWAY CONSTRUCTION 101	*NET REPAIR 102*	*GLOBAL MESSAGES 103*
Advances in Research and Development	*Internet Networks*	*Learning Communities of the Future*
Impact of Science and Technology	*NSFNET Supercomputers*	*Cultural Diversity: People and Societies*
Implications for Human Resources Development	*Online and Satellite Systems*	*Electronic Publishing and "Systems"*

Bits & Bytes

The number of North American newspapers available through online computer services nearly tripled last year to about 175 and is expected to double this year.

State Higher Education Executive Officers publications:
Computers for All Students: A Strategy for Universal Access to Information (Resmer, Mingle, Oblinger, 1995) $15.00.
Advances in Statewide Higher Education Data Systems (Russell, 1995) $10.00.
An Annotated Bibliography on Student Preparation for College and the Workplace (Russell, Christal, 1995) $15.00.
Enhancing the Connection Between Higher Education and the Workplace: A Survey of Employers (Van Horn, 1995) $12,00.
Restructuring in Virginia: A Case in Point (Miller) $10.00
Outcomes Based Budgeting: Connecting Budget Development, Allocation and Outcomes (Andres, 1995) $10.00.
SHEEO, 707 17th St., Denver, CO 80202-3427. FAX 303-296-8332

The Delphi Report is a monthly newsletter on Workflow and Electronic Document Management Systems. Tel 617-247-1511

Internet World 96 will be held in the San Jose Convention Center, CA, Apr 29-May 3. 1-800-632-5537 or 203-226-6967 for the Mecklermedia Internet World Tour that includes Brazil, Japan, England, Korea, Mexico, Philippines, Canada.

Technology 2006 will be held at the Anaheim, CA Convention Center on October 29-31, 1996. This NASA-sponsored event helps stay up with advances in technology (212-490-3999).

Minimum Educational Technology Standards are being considered by the Texas Higher Education Coordinating Board. Roger Elliott, Div of Research, Planning, and Finance; P.O. Box 12788, Austin, TX 78711. FAX: 512-483-6127.

The Interstate New Teacher Assessment and Support Consortium (INTASC) has model standards for beginning teacher licensure.
Council of Chief State School Officers, One Massachusetts Ave., N.W., Suite 700, Washington, DC 20001-1431.

Competencies to provide leadership in the 21st Century must be the core of undergraduate graduate programs. Please send articles about leadership competencies to W. H. Groff.

Ecrs are scheduled for Mar 3 & 17, Apr 14 & 28, May 19, and June 2 & 23 at 8:00 Eastern Time in Classroom 12. Ecrs are intended to help focus on substantive aspects of proposals and projects and for sharing information about resources.

These newsletters may not be produced in March and April because of several other important activities and projects.

APPENDIX C

Seminar Papers, Practicums, and Dissertations

Human Resources Development (HRD) consists of three process assignments (a) an analysis of HRD in the student's work context to determine a few high priorities for action, (b) the creation an IDEAL vision for an HRD issue of high priority, and (c) the development of a multiyear action plan for the preferred scenario for the vision. The three phase problem solving process can be described as follows:

IDEAL
-REAL

ACTION

Professionals in the Western Pennsylvania Cluster tend to be from Ohio, Pennsylvania, West Virginia, and Western Maryland. The analysis, vision, and action plan sequence can be rich by drawing upon problems from multiple contexts. Papers included in this section are as follows:

Thomas H. Kierstead, Garrett Community College, MD
1. "An Analysis of Human Resources Development at Garrett Community College."
2. "Remedial and Developmental Mathematics at Garrett Community College: A Vision for the Future."
3. "A Strategic Plan for Remedial and Developmental Mathematics Initiatives at Garrett Community College."

Derek Crews, Alderson-Broaddus College, WV
1. "An Analysis of the Strengths and Weaknesses of the Human Resources Development Effort at Alderson-Broaddus C."
2. "A Vision of a Program for Learning Disabled Students at Alderson-Broadus College."
3. "A Multi-Year Action Plan to Implement a Program for Learning Disabled Students at Alderson-Broaddus College."

Amy P. Leehan, Edinboro Univesity of Pennsylvania, PA
3. "Strategic Plan for the Development of the Graduate Nurse with Critical Thinking Skills."

Bevin Shiverdecker, Mount Vernon Nazarene College, OH
3. Multi-Year Program Evaluation Action Plan for Mount Vernon Nazarene College's Teacher Education Program."

The Appendix also contains a practicum report on the topic of network administrator by James E. Barger. Also, the Appendix contains a proposal for a major applied research project on Electronic Engineering for Community College of Allegheny County by Pearley Cunningham.

AN ANALYSIS OF HUMAN RESOURCE DEVELOPMENT AT
GARRETT COMMUNITY COLLEGE
MCHENRY, MARYLAND

Human Resources Development

Thomas H. Kierstead

Garrett Community College

Warren H. Groff

Western Pennsylvania Cluster

A seminar paper presented to Programs for Higher Education
in partial fulfillment of the requirements for the
degree of Doctor of Education

Nova Southeastern University

January, 1996

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- Employee Benefits 6
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INTRODUCTION

Garrett Community College (GCC), located in the Appalachian ridges of western Maryland, is the state's smallest community college. Garrett County has a resident population of only 28,000 individuals. Credit headcount for full-time and part-time students hovers around 700, while noncredit registrations amount to nearly 5,000 per year. The combined credit and noncredit full-time equivalency is nearing the 800 mark.

Although the health and survival of the institution has the highest priority, there has been significant attention to the principles of effective human resource development (HRD). The purpose of this paper is to explore the HRD effort at GCC and comment on the strengths and weaknesses in the process.

In an article sponsored by the U.S. Department of Education, Stiegelbauer (1994) states, "For change to be effective, we have to find new ways of interacting as human beings in organizational settings . . . new ideas on change are even more complicated than the old ones and making them work requires a new mind-set and a different style" (p. 2). As institutions develop various plans with vision and goals, change by the individuals and work groups is inevitable. Rothwell and Kazanas (1994) report, "Human resources planning means ensuring that the right numbers and types of people are available to apply the right skills" (p. 11).

MISSION STATEMENT

GCC has tied mission, goals, and vision statements into a general and specific college mission statement. The basic mission statement is that GCC "seeks to make accessible quality higher education and lifelong learning to all who seek personal or professional development" (Garrett Community College [GCC], 1994b, p. 3). The general mission of GCC is consistent with the missions of community colleges throughout the nation and details expectations of students and learning outcomes. The specific mission includes a vision of the role of GCC in the community and "identifies the main purposes and ideals pertinent to Garrett County, its people, heritage, culture and economy" (GCC, 1994b, p. 4). The specific statement includes the educational, student, economic development, cultural, community, and environmental missions of the college.

PERSONNEL MANUAL

The personnel manual at GCC is a comprehensive document of nearly 300 pages. The manual has been in process for several years and, although all employees have access to a copy, it has not been distributed to each employee. The personnel manual consists of eight sections, each of which will be briefly discussed below.

Introduction

The introductory section of the personnel manual is concerned with the college mission, governance, equal opportunity, nondiscrimination and policy formulation. Equal opportunity, nondiscrimination and policy formulation are routine and standard in design. As a result of Maryland statutory law, GCC is governed by a local, seven-person Board of Trustees, each appointed by the governor for a six-year term.

Beyond the statutory requirement of the Board of Trustees, GCC has developed a rather unique form of governance. The model is designed around the following three principles:

> PRINCIPLE I: Every human being has dignity and worth.
>
> PRINCIPLE II: All human beings should be equal under the law.
>
> PRINCIPLE III: Participative democracy is the form of government that best fits the achievement of the above principles (GCC, 1991, p. 1).

The structure of governance is highlighted by the college cabinet. This group consists of representatives from all divisions of the college, plus representatives from the faculty and staff senates, the student government, and one member of the Board of Trustees. Each representative has one vote although a consensus approach is most often used to reach decisions. Meetings are open to anyone who would like to attend and participate.

In addition to the college cabinet, the administrative council advises the president concerning policy matters. The council consists of three area administrators, three president's staff assistants, and the president.

The president meets with the entire faculty and staff at an all-college forum when issues of particular interest or impact occur. Numerous standing committees also allow for focused participation. The goals of the governance structure at GCC include integration, inclusiveness, open communications, efficiency, flexibility, and responsibility (GCC, 1991, pp. 2-3).

Search/Hiring Procedures

The personnel manual clearly describes the steps involved in the search and hiring process. A step-by-step process is articulated from the initial search requirement through the hiring process. Although there are several categories of positions, the process is virtually identical for any position open at the college. As a result of GCC's small size, internal candidates do not receive any special consideration when applying for open positions within the college.

New Employee Orientation

New employees at GCC go through several levels of orientation. Institutional orientation, personnel orientation, and departmental orientation all follow outlined procedures. The employee is also introduced to GCC's merit compensation scale, evaluation process, and promotion issues.

Employee Status and Relationships

The various categories of employment and the compensation system are explained in considerable detail. Explanations concerning placement of positions on the compensation scale are included. Advancement opportunities, reassignment, tenure and transfers are all carefully outlined. Rights and responsibilities concerning personnel records and disciplinary actions are included. Various paid and unpaid leaves are described. A section describes tuition waivers, tuition assistance, and professional development.

Employee Standards

The employee standards section of the personnel manual includes regulations concerning drug and alcohol use, conflicts of interest, outside employment, solicitation, dress code, and confidentiality. As described in an appendix, a college community "that shares and lives principles of just and humane treatment" (GCC, 1994b, p. 287) forms the underpinnings of the HRD effort at GCC. Principles outlined in the document include good will, dissent, honesty, motivation, communication, and resolving problems.

Working Conditions

The work schedule, attendance, breaks, and meal policies begin the working conditions section of the personnel manual. Payroll issues and reimbursable expenditures, particularly travel expenses, are addressed. Procedures which are implemented upon declaration of financial exigency are detailed. The grievance procedures, both formal and informal, are described.

Employee Benefits

Required benefits including social security, workers' compensation, unemployment, and retirement (full-time employees only) are detailed. Health and disability insurance, sabbaticals, and payroll deductions are reviewed as discretionary benefits. Since GCC's salary scale is by far the lowest in the state, the administration has regularly provided cost of benefit information to employees.

Employment Separation Procedures

Resignation and dismissal are defined, and a formal exit interview process is outlined. The exit interview includes discussion of benefits, return of college property, clearing of accounts, and determination of final paycheck.

HANDBOOKS

Faculty and Staff handbooks have been replaced by the personnel manual. Although a student handbook remains in print, much of the information included in it is also included in the college catalog.

In 1990, the faculty, staff, administration, and student government, followed by the Board of Trustees in early 1991, committed themselves and the institution to the pursuit of excellence. The specific goal for employees was defined "to help students realize their potential as learners so that each person can enjoy to the fullest extent possible the gratifications and freedom that knowledge and capability confer" (GCC, 1994a, p. 1). The quest for excellence included defining the related characteristics for each of the groups mentioned above. The institutional goal was to become "the very best small rural community college in the United States. To measure excellence, it compares itself with other small rural community colleges" (GCC, 1994a, p. 2).

PROFESSIONAL DEVELOPMENT PROGRAMS

The personnel manual recognizes the value of professional development and encourages employees to seek out educational opportunities. The policy allows employees to enroll in any GCC credit course tuition free. Employees who are pursuing bachelor's or graduate degree programs may apply for tuition assistance pending adequate budgetary resources. The college supports liberal work hour adjustments to prevent conflicts for those engaged in professional development activities.

Adjunct and full-time faculty engage in one professional development activity each semester. In recent years, student-centered learning and technology applications have been the topics of the faculty development activity. High-level administrators engage in planned professional development activities at the direction of the college president. Concepts in Total Quality Management have been introduced at the top of the organizational hierarchy. The president has asked other areas of the college to consider engaging in a continuous improvement model. To date the athletic department, business office, and continuing education have explored possibilities related to the model. In other departments at GCC, the area manager has the responsibility to plan and implement appropriate professional development activities.

Support staff are the most vocal concerning limited professional development particularly in technology related issues. Support staff are encouraged to enroll in credit or noncredit computer courses, to take advantage of regional seminars, or to work with others who have more knowledge. The continuing education department has offered several technology-related seminars for the college community as a result of interest generated about certain technology applications.

ORGANIZATIONAL DEVELOPMENT

GCC's organizational development includes a strategic plan, operational plans from each budget area, and a financial plan. Each of these plans is designed for a period of five years and is revised as necessary. The financial plan is closely tied to the strategic planning for the institution as a result of monetary issues related to strategic goals. In addition, each budget area creates an annual operating plan taking into account current issues and trends. Although there is no specific HRD plan, the personnel manual, governance structure, and commitment to excellence clearly show the institutional commitment to HRD.

The basic planning process at GCC is similar to the 1982, E. Huse model described by W. C. Rothwell and H.C. Kazanas (1994) which includes strategic planning for top level management, tactical planning for middle managers, and operational planning for supervisors (pp. 8 - 9). The significant difference for GCC's model occurs as a result of the governance structure. Employees at all levels have the right and responsibility to influence the decision making and planning process with their input. Any employee may request a cabinet agenda item and may address the cabinet in support of their concern. For strategic planning, the president makes recommendations for approval to the Board of Trustees. Tactical and formal operational planning are reviewed and approved by the president.

HRD FOR SPECIFIC PRIORITIES

Remedial and Developmental Services

GCC serves a rural, Appalachian population which consists of many individuals who were not on a college preparatory track in high school. Several levels of remedial and developmental services are offered to students with differing backgrounds. Students who are pursuing basic literacy skills or high school diplomas enroll in the noncredit division's Adult Basic Education or General Educational Development programs. Although GCC has an open enrollment policy, all potential freshman level students are required to complete entrance placement tests in English and mathematics. Students are then placed in remedial, developmental, or freshman level course work. Students have the right to retest if they believe their placement is incorrect.

Students placed in remedial or developmental tracks may enroll for credit or noncredit depending on their particular financial aid or residency status. Aside from course work, students have resources available in the mathematics and English resource laboratories. Professionals and student mentors staff the laboratories during normal working hours, and evening students have the opportunity to schedule one-on-one sessions during off hours. Students also have the opportunity to test out of required courses through a challenge test process.

Community Outreach

GCC is the only provider of higher education in the county and the perceptions of the community are integral to the development of the college. In 1992, the college conducted an environmental analysis of both its internal and external constituencies. The external community assessment was widely advertised to the general public and also sent to selected targets. Overall the external community rated GCC as important to essential in meeting the post-secondary educational needs of the community, acceptable to outstanding in performance, and that they would recommend GCC to a friend or family member (GCC, 1994c, p. 11).

In 1993, GCC invited the general public to engage in a convention to envision the college in the year 2004. More than 100 individuals attended and participated in one of eight areas significant to institutional life: academic life, continuing education, student life, athletics, work environment, enrollment development, communiversity and distance education, or physical plant and campus development. Each group was given direction, asked to evaluate current performance, and determine how GCC could change and excel by the year 2004. The recommendations of each group were organized, and a draft for review was presented to all participants in early 1994. The president tasked administrators to integrate the community's vision into the strategic and operating plans (GCC, 1994d, p. 4).

Disabled and Handicapped

As a part of the admission process, students are asked to identify any disabilities or handicapping conditions which might affect their learning process. Both the Director of Student Services and Academic Dean are tasked with the responsibility to accommodate students with disabilities as necessary for access and learning issues. GCC was built in 1972 and basic accommodations were included in the building plans for individuals requiring wheelchair access. In 1994, an audit was conducted to determine compliance with the Americans With Disabilities Act of 1990, including accommodation of students, employees and the public. Audit results have not yet been released.

BUDGET ALLOCATION

GCC has yet to recover from statewide rescissions in fiscal 1991 and 1992. The potential for shrinking federal, state, and county funding has made the budget process difficult. The institution has invested in several auxiliary enterprises in the hope that new revenues will be generated. Salaries for employees are the lowest in the state, and the institution has made a commitment to improving employee compensation.

The budget process at GCC follows the governance structure in format. The president and Board of Trustees are conservative managing institutional funds. In recent years, monies allocated to salary improvement have been held as discretionary funds and then distributed as mid-year and end-of-year bonuses. Bonuses do not affect the base salary of employees. Regular step and promotion salary increases have not been impacted and each employee has been granted step increases and promotion when earned.

CONCLUSION

GCC's strengths and weaknesses revolve around its size and location. The small size of the college and its relatively small group of employees allows for strength in governance and interpersonal communications. Change may be more easily implemented since the employees know one another well. Most employees are rooted in the geographic area and understand the difficulties of living and working in a remote, rural region. On the other hand, GCC's small size creates limited revenue from governmental sources. Its rural community is not affluent, and many students may not have the fiscal resources to attend more expensive schools.

Current initiatives include the Adventuresports Institute® designed to organize outdoor sports events in this four-season resort, a child care center to provide services to students and the public, a residence hall to meet the living needs of students who do not reside in the county, and the Garrett Rural Information Cooperative designed as the online technology information hub of the region. All current initiatives have the potential to generate significant income.

Future initiatives include the improvement of work life quality through improved compensation, the construction of an academic building to provide for increased course sections and programs, and the construction of a new gymnasium and wellness center.

In the area of HRD, the institution should consider the development of a human resources plan. Most of the pieces appear to be in place, but have yet to be pulled together into the planning process of the institution.

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REMEDIAL AND DEVELOPMENTAL MATHEMATICS:
A VISION FOR THE FUTURE

Human Resources Development

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A seminar paper presented to Programs for Higher Education

in partial fulfillment of the requirements for the

degree of Doctor of Education

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INTRODUCTION

Context

Garrett Community College (GCC), Maryland's smallest community college, is located in the Appalachian ridges of rural western Maryland. From an historical context, education has not been highly valued by the community. GCC's entering student population has consistently scored below the college level on entrance placement tests. N. J. Priselac (personal communication, January 29, 1996), chair of mathematics at GCC, reports that approximately 80% of current incoming freshmen students score at, or below, the 12th grade level in standardized entrance placement testing.

T. G. Edwards (1994) reports numerous mathematics reform projects across the United States as a result of crisis related reports. Edwards sites the National Council of Teachers of Mathematics (NCTM) standards and reform efforts in developing new curricula, teacher professional development, and the use of technology in the mathematics classroom (pp. 1-6).

Concerning NCTM standards, M. A. Suydam (1990) maintains that mathematics instruction must be viewed from a constructive perspective which includes student group and individual learning opportunities, interaction between students and instructors, presentation by instructors, and student practice of mathematics concepts. Suydam states that technology is changing life patterns; and mathematics instruction needs to incorporate student access to calculators and computers to process information, engage in calculations, and solve problems in individual and group activities (pp. 1-3).

The purpose of this paper is to develop a vision for the future of remedial and developmental mathematics instructional delivery at GCC. The vision incorporates the needs of the community, current initiatives, and changing technology.

Definition of Terms

Collaborative Teaching. The process of team building in instruction including students, tutors, mentors, and faculty engaged in the learning process.

Cooperative Learning. The activities of students in small groups to solve problems while engaging in critical thinking processes.

Developmental Mathematics. Curriculum between 9th and 13th grade equivalencies including geometry and algebra competencies.

Mentor. A position designed to assist currently enrolled students with students who have previously completed a specific mathematics course with at least 80% competency and successfully completed a training program in mathematics instruction.

Multimedia Classroom. A learning environment which incorporates traditional classroom media (overheads, video cassette players, slide projectors, etc.) and state-of-the-art technology (computers, graphing calculators, satellite down link projection, internet, etc.).

Remedial Mathematics. Curriculum below 9th grade equivalency including basic arithmetic competencies.

Tutor. A position designed to assist currently enrolled students with students who have previously completed a specific mathematics course with at least 80% competency.

Issues

GCC is the only institution of higher education in the county. As a part of the specific mission, GCC fosters:

> the practical value of a higher education as a means for achieving economic betterment . . . programs that motivate and encourage individual achievement, self-confidence, and success . . . [overcoming] barriers to seeking a higher education by respecting and caring for students as individuals, by defining their strengths and needs, [and] by starting where they are ready to begin (Garrett Community College, 1995, pp. 1-2).

The commitment to student learning regardless of entry level has prompted GCC to develop a comprehensive remedial and developmental math program. Nearly 20% of new students have mathematics skill levels below 9th grade competencies, 70% are between 9th and 12th grade, and only 10% have skills adequate for entry into freshman level college algebra (N. J. Priselac, personal communication, January 29, 1996).

Initially GCC developed a traditional approach to address the problem integrating remedial and development courses in arithmetic, beginning algebra, geometry, and advanced algebra. Courses were designed around middle and secondary mathematics curricula and delivered in three to six semester hour increments. Classroom delivery occurred in general classroom space not specifically designed for mathematics instruction. Students expressed dissatisfaction with the process, instructors voiced disillusionment, and student retention decreased. There was also a significant financial impact on students who often found themselves in developmental mathematics courses for two or more years before entering freshman level mathematics.

THE VISION

New Beginnings

A partnership was developed between the Garrett County Board of Education, Frostburg State University, West Virginia University, and GCC to develop not only a new delivery system, but also to provide professional development for mathematics instructors at all levels. The partners embraced the NTCM standards and, in 1993, developed the goal to "utilize strategic planning, sharing information, and researching tools to develop new educational technologies, new curricula, and new educational delivery systems over the next decade" (Priselac, 1996, p. 2).

Financial resources for the project were obtained from the United States Department of Education, Regional Education Service Agency, Mon Valley, and Eisenhower grants. The project objectives included:

1. Continue restructuring the Garrett Community College (GCC) mathematics curriculum, including the use of computers in the classroom, to improve computational problem solving, and critical thinking skills for mathematics students.
2. Form partnerships and linkages with education and business and industry to improve workforce quality for the 21st century, particularly with respect to mathematics competencies.
3. Design and develop three multi-media mathematics classrooms and a support laboratory utilizing instructional technology to better support the teaching/learning process.
4. Develop a model mathematics curriculum for both under prepared and honors level college students using distance learning technology supported by manipulatives and cooperative group learning techniques (Priselac, 1996, p. 2).

To date the project has made significant progress with professional development for college instructors, public school teachers, and program mentors. The addition of multimedia classrooms at the college, as well as the two local high schools, has enabled the teaching team to begin the process of change in the classroom environment. Family mathematics evenings using the fiber-optic distance learning classroom have provided the opportunity for elementary, middle and secondary students and their families to develop interactive mathematics learning skills. Collaborative teaching and cooperative learning processes have been implemented as a part of restructuring college remedial and developmental mathematics delivery. Various options including challenge testing, tutoring, mathematics laboratory and nontraditional courses have broadened the learning activities available to remedial and developmental mathematics students enrolled at GCC.

Looking Towards the Future

Technology

Dramatic changes in technology are affecting the way educators and students view curriculum delivery. Many educators are in agreement that expectations regarding instructional design, convenience, and distance learning will continue to alter the public's perception of services to be delivered by colleges and universities (DeLoughry, 1992, p. A21; Jacobson, 1994, p. A26; University of Pennsylvania, 1995, p. 42). Delivery of course material will follow paths seemingly far removed from the traditional classroom. GCC's remedial and developmental mathematics initiative will be no exception (see Figure 1).

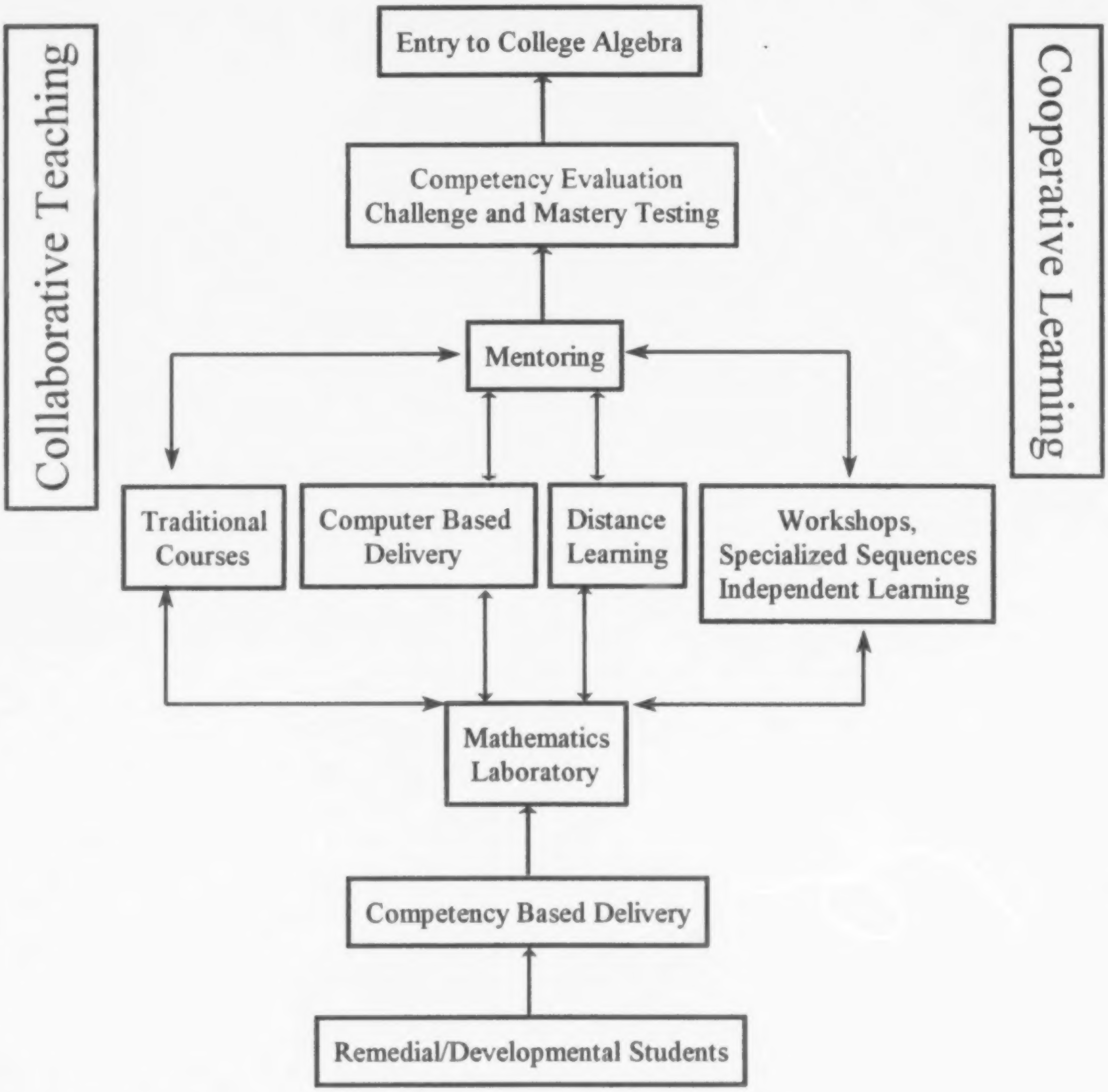
Collaborative Teaching
Entry to College Algebra
Competency Evaluation Challenge and Mastery Testing
Mentoring
Cooperative Learning
Traditional Courses
Computer Based Delivery
Distance Learning
Workshops, Specialized Sequences Independent Learning
Mathematics Laboratory
Competency Based Delivery
Remedial/Developmental Students

Figure 1. Alternative delivery systems for remedial and developmental mathematics.

Mathematics Laboratory

The mathematics laboratory is one of the link pins for the remedial and developmental mathematics program. The laboratory is staffed by instructors, mentors and tutors throughout the day and into the early evening hours. Technical resources include the same hardware and software included in the multimedia classroom. Students who are at distance sites (including their homes) reach the laboratory through the telephone or bulletin board system. All students participate in cooperative groups while enrolled in remedial and developmental courses at GCC.

Mentoring

A second link pin for remedial and developmental mathematics at GCC is the mentor system. Mentors are available at all levels of the program to assist students with the learning process. Because mentors are also students at the college, cooperative learning is facilitated without the barriers often associated in the teacher-student relationship.

Traditional Courses

Traditional courses take place in the multimedia mathematics classrooms. Some students find that the structured educational experience meets their needs more fully than alternative routes to mathematics mastery. Cooperative learning and exercises related to reality are stressed as students master the mathematics competencies at each level. Students enroll in the more traditional courses at a level determined by placement testing. They have the opportunity to complete the course at any time through challenge or mastery testing.

Computer Generated Learning

Students will have the opportunity to explore remedial and developmental mathematics competencies using a variety of computer assisted delivery methods. Students have access to computers in the classroom, mathematics laboratory, library, and open computer laboratories.

Laptop computers are available for loan. Students connect to the mathematics laboratory via the GCC bulletin board system. The system allows them to work individually, one-on-one, or in a cooperative learning group.

Distance Learning

A variety of distance learning technologies are available to students. Students desiring a more structured environment travel to a remote site and attend classes in one of three fiber-optic, distance learning classrooms. Courses are available on videotape and are delivered by mail or over the college cable television network. Students enrolled in videotape course work still engage in cooperative learning through the mathematics laboratory. Direct delivery to students at home is accomplished through the GCC bulletin board. Students participate with computers in electronic classrooms and the electronic mathematics laboratory.

Workshops, Specialized Sequences, and Independent Learning

The diverse student population at GCC includes many nontraditional students who have been away from mathematics for several years. Although these students may have mastered mathematics competencies in the past, an accelerated delivery system may bring them to mastery at a more rapid pace. Accelerated course sections allow students to work at their own pace to master competencies at any level above beginning algebra. These sections include workshops, specialized sequencing, cooperative learning, and independent targeted learning strategies. Students may use any of the resources available and engage in challenge or mastery testing when ready.

Competency Evaluation

After entrance placement testing, students have the opportunity to review competencies in course study guides and the mathematics laboratory. Students who believe that they have mastered the material may engage in challenge testing. Successful completion advances the student to the next mathematics level. Students must master mathematics at the 70% competency level in order to advance. Assessment of competency in more formal course work occurs first with a pre-test. Students who score at mastery have the option to move to the next mathematics level. Those who do not advance continue with course work until mastery is reached.

CONCLUSIONS

There is little reason to believe that the perceptions about the value of education in the western Maryland region will soon change. Although the partnership between local universities, colleges, and the public school system may improve the mathematics skill level of high school graduates, as time passes mathematics competencies are lost. It is likely that the student population at GCC will continue to include many nontraditional students. It is, therefore, unlikely that future students will have significantly improved mathematics skills.

Developments in technology may well provide dramatic changes in the way education is delivered to students. Alternative delivery systems utilizing technology will provide easier access to education. Delivery directly to students' homes is possible today. The hardware and software that allows such delivery will become more sophisticated and user friendly.

The challenge for GCC is to make remedial and developmental mathematics educational opportunities available to students using current and future technology. An additional challenge is to foster collaborative and cooperative efforts using the available technology. It is unlikely that technology will replace the need for face-to-face contact and group interaction, although technology will certainly augment the learning process.

Budgetary considerations must be resolved. The remedial and developmental mathematics effort at GCC is costly in both human and technological resources. To date, the initiative is primarily grant funded. As the sole institution of higher learning in the county, GCC's mission clearly states the need to provide students with educational opportunities beginning at each student's entry skill level. In order to become marketable in the current work force, students from the region must develop skills and knowledge to be competitive.

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A STRATEGIC PLAN FOR REMEDIAL AND DEVELOPMENTAL MATHEMATICS INITIATIVES AT GARRETT COMMUNITY COLLEGE

Human Resources Development

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INTRODUCTION

Context

Garrett Community College (GCC) is located in the Appalachian ridges of rural western Maryland. Although Garrett County has the largest land area of any county in Maryland, it has the smallest resident population. N. J. Priselac (personal communication, January 29, 1996), chair of mathematics at GCC, reports that approximately 80% of incoming freshmen students score at, or below, the 12th grade level in standardized entrance placement testing.

GCC instituted a series of remedial and developmental mathematics courses in 1991. Between 1991 and 1994, the average success rate for those completing remedial and developmental mathematics courses was 77% (Garrett Community College [GCC], 1995, pp. 32-33). The initial approach included traditional delivery systems for both remedial and developmental mathematics in spaces not specifically designed for mathematics instruction. Students expressed dissatisfaction with the process, instructors voiced disillusionment, and student retention decreased. As a result in 1993, GCC initiated a program to develop partnerships between regional educators, incorporate national mathematics reform standards, and redesign remedial and mathematics delivery systems. N. J. Priselac (1996) reports the goal to "utilize strategic planning, sharing information, and researching tools to develop new educational technologies, new curricula, and new educational delivery systems over the next decade" (p. 2).

The purpose of this paper is to develop a strategic plan of selected goals and objectives for remedial and developmental mathematics instructional delivery at GCC. The strategic plan will incorporate curricula development, professional development, and technology issues. The basis for the strategic plan is drawn from T. H. Kierstead's (1996) vision of the future of remedial and developmental mathematics at GCC (pp. 1-12) (see Appendix A for the conceptual figure).

Definition of Terms

Collaborative Teaching. The process of team building in instruction including students, tutors, mentors, and faculty engaged in the learning process.

Cooperative Learning. The activities of students in small groups to solve problems while engaging in critical thinking processes.

Developmental Mathematics. Curriculum between 9th and 13th grade equivalencies including geometry and algebra competencies.

Mentor. A position designed to assist currently enrolled students with students who have previously completed a specific mathematics course with at least 80% competency and successfully completed a training program in mathematics instruction.

Multimedia Classroom. A learning environment which incorporates traditional classroom media (overheads, video cassette players, slide projectors, etc.) and state-of-the-art technology (computers, graphing calculators, satellite down link projection, internet, etc.).

Remedial Mathematics. Curriculum below 9th grade equivalency including basic arithmetic competencies.

Tutor. A position designed to assist currently enrolled students with students who have previously completed a specific mathematics course with at least 80% competency.

Rationale

As the only institution of higher learning in the county, GCC has included in its specific mission fostering of student "individual achievement, self-confidence, and success . . . by defining [students] strengths and needs, [and] by starting where they are ready to begin" (GCC, 1995, pp. 1-2). Nearly 20% of new students have mathematics skill levels below 9th grade competencies, 70% are between 9th and 12th, and only 10% with skills adequate for entry into college level mathematics (N. J. Priselac, personal communication, January 29, 1996). The commitment to student learning regardless of entry level has prompted GCC to develop and refine a comprehensive remedial and developmental mathematics program.

In the effort to refine the mathematics program, GCC incorporated the National Council of Teachers of Mathematics (NCTM) standards, recognized national efforts to restructure education, and developed partnerships with other educational institutions. NCTM standards and reform efforts include the development of new curricula, professional development, and technology (Edwards, 1994, pp. 1-6; Suydam, 1990, pp. 1-3).

Mathematics education which incorporates new curricula and the use of technology, along with adequate teacher preparation for the new environment, may well be changing the face of mathematics instruction in the United States. Research suggests a fundamental change in the classroom environment is occurring through the use of cooperative learning rather than the traditional, lecture oriented method (Brosnan and Hartog, 1993, pp. 3-4; Gokhale, 1995, pp. 1-9; Jacobson, 1993, p. A18; Matthews, Cooper, Davidson and Hawkes, 1995, p. 37; Pandey, 1990, p. 1).

GCC has made a commitment to cooperative learning and utilization of technology for remedial and developmental mathematics instruction. The use of technology in education is deemed critical by some and will most certainly act as a change agent moving educators away from traditional models of delivery (DeLoughry, 1992, pp. A21-22; Jacobson, 1994, pp. A26-28).

As change occurs, instructors must be prepared to cope with, and adjust to, changes in curricula and support technology. Teaching in a cooperative environment forces instructors to use more facilitation skills and fewer lecture skills. Constantly changing technology used in multimedia classrooms requires that instructors obtain additional professional development. In the GCC model, mentors and tutors play an important role in fostering student learning. Adequate professional development which prepares the team for collaborative teaching is a core theme of the mathematics initiative.

The vision for the future is to incorporate the use of technology, collaborative teaching, and cooperative learning into the remedial and developmental mathematics program at GCC. Support and encouragement of learning is facilitated by faculty, mentors, and tutors in instructional designs which include classroom, computer, laboratory, and distance learning contexts. Competency evaluation occurs throughout the process through challenge and mastery testing.

GOALS AND OBJECTIVES

GCC has an open enrollment policy and accepts students at all levels of mathematics proficiency. The expectation is that students will acquire mathematics competencies "at a level consistent with requirements for quantification in community college studies" (GCC, 1994a, p. 5). College level algebra is the minimum mathematics level for degree completion at GCC. Remedial and developmental mathematics courses are designed to provide students with the opportunity to develop mathematics competencies to the required entry level for degree programs. In 1993, GCC's faculty, staff, students, and individuals from the community gathered together and established a ten year vision to shape the future of the college. One aspect of the vision includes the concepts of flexibility, balance, articulation and assessment of developmental studies (GCC, 1994b, p. 11). Within these parameters, GCC attempts to establish a "setting with technological support, math resources, and a mentor support system to provide a mathematics curriculum which will inspire GCC students to better understand and apply mathematics competencies" (Priselac, 1996, p. 2).

GCC will continue to enhance the remedial and developmental mathematics curricula to meet students' learning needs, foster professional development to enable instructors, mentors, and tutors to facilitate the learning process, and use technology in a variety of settings to support the learning and teaching process (see Appendix B for the action plan).

METHODOLOGY

Curriculum Development

GCC will continue to offer traditional remedial and developmental mathematics courses including basic computational skills, pre-algebra, beginning algebra, geometry, and advanced algebra. Workshops, specialized sequences, and independent learning activities will be continued and enhanced at all levels to provide students with alternative experiences to reach competency. The mathematics laboratory will provide students at all levels with curriculum assistance and will be staffed with an instructor, a mentor, and tutors as required. Distance learning activities for elementary students, secondary students, and their families will continue. Curriculum will be developed for additional distance learning efforts including distance learning classrooms, computer based delivery using the GCC bulletin board as an electronic classroom, and the possibility of cable television delivery. Cooperative learning issues will be addressed in all initiatives.

Professional Development

Faculty, mentors, and tutors will continue to engage in professional development activities designed to enhance the skills of the team in a collaborative environment. Cooperative learning, using technology, and manipulatives will be the focus of professional development. Delivery of curricula using a variety of non-traditional models will be an additional area of development. Exploration of additional models for distance learning classrooms, computer classrooms, and cable television will be a priority. Nationally recognized models and trainers will be solicited for professional development activities. An historic review of the benefits and costs to the institution of using adjunct instructors, rather than full-time instructors, will be undertaken.

Technology

The college will continue to develop the technology capabilities of the mathematics classrooms. Two multimedia classrooms will be added to the existing multimedia classroom and mathematics laboratory. Computers, graphing calculators, and manipulatives will be major focal points in the multimedia classrooms. The use of distance learning classrooms will continue. Using the GCC bulletin board system as a delivery system via electronic classrooms will be explored and a pilot program will be established. The concept of cable television as a delivery vehicle will be explored.

EVALUATION

Curriculum Development

Historical records, status while enrolled, and future success will be tracked for all students enrolled in remedial and developmental mathematics at GCC. Faculty, mentor, tutor, and student evaluations will be conducted and evaluated for all remedial and developmental mathematics activities. A review of the literature, investigation of existing models, and development activities will occur for both computer-based and cable television delivery systems.

Professional Development

Outcomes from professional development activities will be assessed by participants and success rates in mathematics curriculum delivery. Professional development in the area of technology familiarity, integration, and application will be assessed. New initiatives regarding delivery models will be closely monitored. Alternative staffing needs will be assessed using historic data, present conditions, and future projections.

Technology

Technology as a learning resource tool will be evaluated regularly to insure that it is helpful to the learning process. Classroom and mathematics laboratory technology support will be evaluated for effectiveness. As distance learning initiatives including distance learning classrooms, the GCC bulletin board, and cable television are developed and initiated, careful evaluation as to degree of effectiveness versus more traditional methods must be determined.

BUDGET

Curriculum Development

Budgets for curriculum development in traditional courses and the mathematics laboratory will be developed to insure effective delivery using the collaborative teaching and cooperative learning models. Curricula for workshops, specialized sequences, and independent learning activities will developed. Delivery will be budgeted using the self-funding, continuing education model. Operational budgets will be developed for distance learning activities. Although new initiatives may be grant funded, efforts must be made to secure funding for continuing initiatives. Estimated additional budget allocation is $60,000 over three years.

Professional Development

Collaborative teaching and cooperative learning activities require highly trained instructors, mentors, and tutors. Regular operating budget dollars, beyond grant amounts, must be allocated to fund initiatives. Available grant funding will be secured whenever possible to fund new initiatives. Successful remediation appears to be human-resources dependent. A close assessment of the part-time versus full-time issues, as they relate to retention and savings must be accomplished during the budgeting process. Estimated additional budget allocation is $165,000 over three years.

Technology

Two additional multimedia classrooms will be developed using grant funding (estimated cost $200,000 over two years is included in the total additional budget allocation below). Advancements in technology will require additional budget dollars for upgrades to hardware and software in the three multimedia classrooms and mathematics laboratory. Exploration of new delivery technologies and pilot programs will require additional funding. Possible grant funding of new initiatives will be aggressively explored. Estimated additional budget allocation is $280,000 over three years.

CONCLUSION

GCC has a commitment to deliver courses at the appropriate level for all incoming students. Many incoming students mathematics skills fall significantly below those necessary for entry into college algebra. Technology developments allow for the development of new delivery methods. The collaborative teaching and cooperative learning model has a history of effectiveness with GCC's students.

GCC needs to adequately fund mathematics initiatives, faculty, mentors, and tutors to insure continued success. Realizing that budgetary resources are scarce, the institution must make a decision concerning the value of remedial and developmental mathematics, not so much directly for the institution, but more for the students who come to the college with the expectation that education will change their future life.

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APPENDIXES

Appendix A

Alternative Delivery Systems for Remedial and Developmental Mathematics

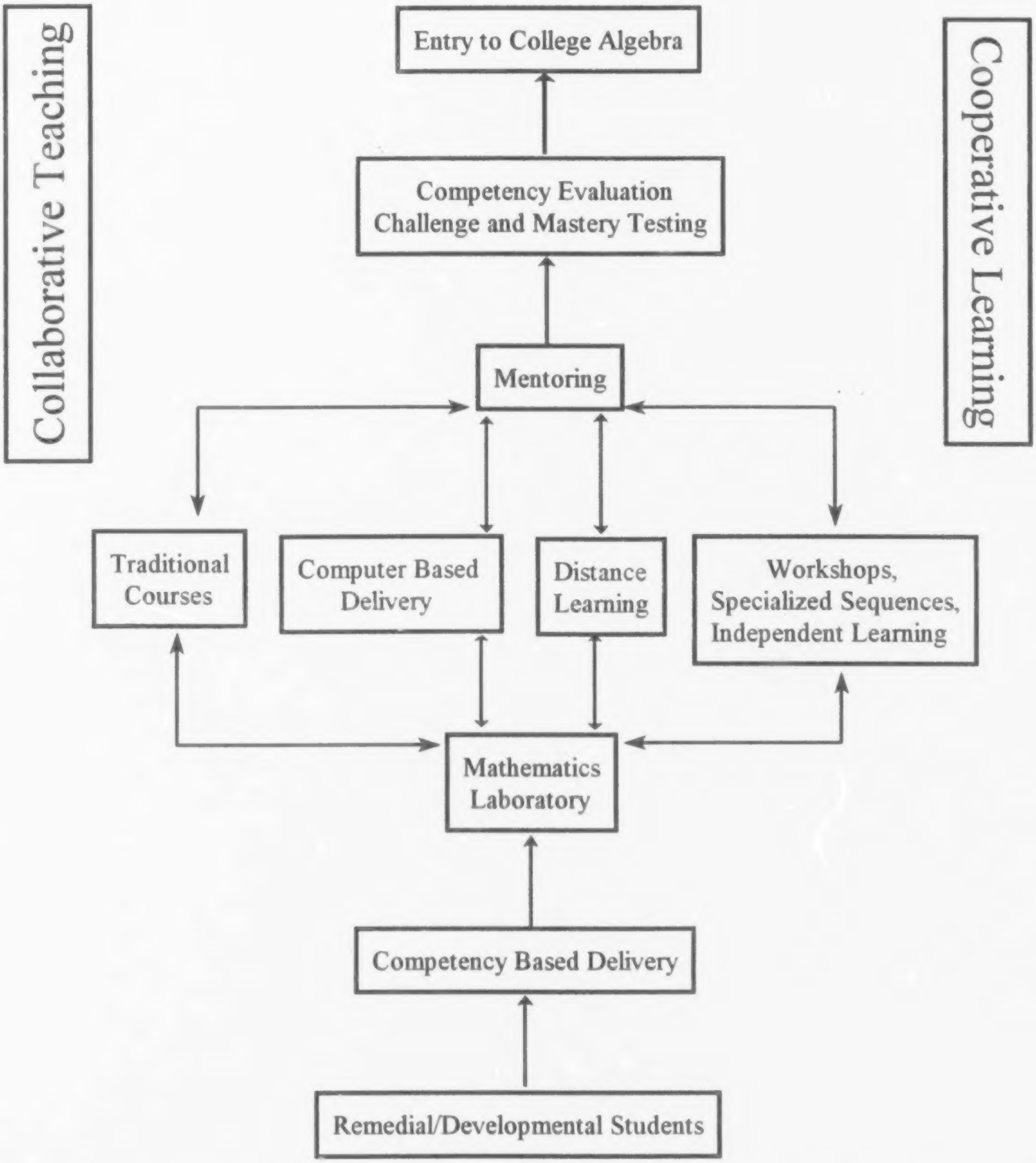
Collaborative Teaching
Entry to College Algebra
Cooperative Learning
Competency Evaluation Challenge and Mastery Testing
Mentoring
Traditional Courses
Computer Based Delivery
Distance Learning
Workshops, Specialized Sequences, Independent Learning
Mathematics Laboratory
Competency Based Delivery
Remedial/Developmental Students

Figure 1. Alternative delivery systems for remedial and developmental mathematics (Kierstead, 1996, p. 7).

Garrett Community College

Action Plan for Remedial and Developmental Mathematics Initiatives

Goal 1: Provide effective curriculum development for remedial and developmental mathematics.

Objective 1.1: Continue implementation and evaluation of remedial and developmental multimedia classroom mathematics curriculum.

	FY1997	FY1998	FY1999
Method	Implement remedial and developmental mathematics curricula to utilize multimedia classroom #2 to enhance student competency development. Modify delivery in the mathematics laboratory to insure continuity.	Implement remedial and developmental mathematics curricula to utilize multimedia classroom #3 to enhance student competency development. Modify delivery in the mathematics laboratory to insure continuity.	Compare curriculum delivery in multimedia classroom #1-3, and the mathematics laboratory.
Evaluation	Evaluate student outcomes from mathematics delivery in both traditional classrooms and multimedia classrooms. Evaluate mathematics laboratory effectiveness in relation to classroom delivery. Track all students.	Evaluate student outcomes from mathematics delivery across the campus. Track all students.	Evaluate student outcomes from mathematics delivery across the campus. Track all students.
Budget	Operating budget - no additional funds requested.	Operating budget - no additional funds requested.	Operating budget - no additional funds requested.

Goal 1: Provide effective curriculum development for remedial and developmental mathematics.

Objective 1.2: Continue to develop, implement, and evaluate workshops, specialized sequences, and independent learning activities to provide students with alternative experiences to reach competency.

	FY1997	FY1998	FY1999
Method	Assess the need for additional workshops, specialized sequences, and independent learning activities.	Assess the need for additional learning activities.	Assess the need for additional learning activities.
	Inquire about and visit recognized model programs.	Develop new workshops, specialized sequences, and independent learning activities. Pilot at least one per semester.	
	Continue to offer identified workshops, specialized sequences, and independent learning activities.	Continue to offer identified learning activities.	Continue to offer identified learning activities.
		Inquire about and visit recognized model programs.	Develop and pilot at least one new workshop, specialized sequence, or independent learning activity per semester.
Evaluation	Assess student entry and exit competency level in workshops, specialized sequences, and independent learning activities.	Assess student competency levels.	Assess student competency levels.
		Evaluate pilot program effectiveness.	Evaluate pilot program effectiveness.
Budget	Operating budget + $5,000	Operating budget +$10,000	Operating budget +$10,000

Goal 1: Provide effective curriculum development for remedial and developmental mathematics.

Objective 1.3: Continue to develop, implement, and evaluate distance learning activities including distance learning classrooms, electronic classrooms, and cable television.

	FY1997	FY1998	FY1999
Method	Continue fiber-optic distance learning to local high schools. Conduct a literature search and visit successful models with electronic classrooms.	Continue fiber-optic distance learning to local high schools. Develop a model for delivery utilizing an electronic classroom.	Continue fiber-optic distance learning to local high schools. Implement a pilot for delivery utilizing an electronic classroom. Conduct a literature search and visit successful models with cable television delivery.
Evaluation	Evaluate student competency level in fiber-optic delivery. Assess the level of success of institutions with model electronic classroom delivery.	Evaluate student competency level in fiber-optic delivery. Assess electronic classroom model relationship to existing program.	Evaluate student competency level in fiber-optic delivery. Evaluate pilot electronic classroom model effectiveness. Assess the level of success of institutions with model cable television delivery.
Budget	Operating budget + $5,000	Operating budget +$15,000	Operating budget +$15,000

Goal 2: Provide professional development activities for faculty, mentors, and tutors.

Objective 2.1: Develop, implement, and evaluate professional development activities for faculty, staff, and tutors.

	FY1997	FY1998	FY1999
Method	Identify and implement professional development activities to foster collaborative teaching and cooperative learning strategies.	Continue collaborative and cooperative professional development.	Continue collaborative and cooperative professional development.
	Provide for technology training using multimedia capabilities.	Provide for technology training using multimedia capabilities.	Provide for technology training using multimedia capabilities.
	Provide nationally known experts for one professional development activity per semester.	Identify additional distance learning and electronic classroom experts for future professional development.	Provide nationally known experts for one professional development activity per semester.
	Identify alternative experience and electronic classroom experts for future professional development.	Provide nationally known experts for one professional development activity per semester.	Identify cable television delivery expert for future professional development.
Evaluation	Assess proficiency using student and professional evaluations.	Assess proficiency using student and professional evaluations.	Assess proficiency using student and professional evaluations.
	Review teacher, student, and tutor evaluations of professional development.	Review teacher, student, and tutor evaluations of professional development.	Review teacher, student, and tutor evaluations of professional development.
	Assess success of model program expert and review teaching style.	Assess success of model program expert and review teaching style.	Assess success of model program expert and review teaching style.
Budget	Operating budget + $40,000	Operating budget +$40,000	Operating budget +$40,000

Goal 2: Provide professional development activities for faculty, mentors, and tutors.

Objective 2.2: Develop a cost versus benefit assessment of staffing requirements for teachers, mentors, and tutors to determine if savings are possible through restructuring.

	FY1997	FY1998	FY1999
Method	Develop a cost versus benefit assessment of teachers, mentors, and tutors. Create a "best of all worlds" vision and formulate a strategic plan for restructuring. Implement the budget for distance learning teachers, mentors, and tutors.	Implement restructuring strategic plan. Develop staffing budget for electronic classroom delivery and support system.	Develop staffing budget for cable television delivery system. Implement staffing budget for electronic classroom delivery and support system.
Evaluation	Assess the historical cost versus benefit ratio using part-time teaching staff. Evaluate the strategic plan for restructuring against the current budget. Assess the costs related to turnover and training using a predominantly part-time professional teaching staff.	Considering budgets, curriculum delivery, and turnover, evaluate effectiveness of restructuring.	Evaluate the potential benefits and liabilities, from a personnel perspective, of a cable delivery system. Evaluate personnel issues relating to the pilot electronic classroom delivery and support system.
Budget	Operating budget + $10,000	Operating budget +$20,000	Operating budget +$15,000

Goal 3: Provide for the use of technology in remedial and developmental mathematics.

Objective 3.1: Develop and enhance the use of technology in the delivery of remedial and developmental mathematics.

	FY1997	FY1998	FY1999
Method	Develop a second multimedia classroom which replicates multimedia classroom #1.. Purchase and install software packages.	Develop a third multimedia classroom which replicates classrooms #1 and #2. Purchase and install software packages. Explore the possibilities of using the GCC bulletin board as an electronic classroom.	Implement a pilot project using the GCC bulletin board for electronic delivery. Explore the possibilities of using cable television channel 20 to deliver mathematic curricula.
Evaluation	Evaluate the technology in the mathematics laboratory, multimedia classroom #1, and #2 to insure replication. Assess the operation of all hardware, software, and equipment	Evaluate the technology in multimedia classroom #3 to insure that it replicates preceding multimedia classrooms. Assess the operation of all hardware, software, and equipment. Evaluate the potential for electronic classroom delivery using the GCC bulletin board system.	Evaluate the success of the electronic delivery as compared to other media. Evaluate the potential for television delivery of mathematics curricula.
Budget	Operating budget + $110,000	Operating budget +$110,000	Operating budget +$60,000

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March 25, 1996

Dr. Warren H. Groff
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Memphis, TN 38104

Dear Dr. Groff:

Please find corrected copies of HRD papers #1 and #2 attached. I believe you have a clean copy of paper #3 in the file already.

Thank you for an enlightening HRD course in Western Pennsylvania. Although I felt completely worn out at the end of the class, I certainly appreciated you insights and assistance with form and style.

Please feel free to use any of my HRD papers either in published form or as handouts for others. Feel free to use your own judgement about the way they may be useful to you, or to other students in the program.

Thanks again for spending time with us in Sewickley!

Yours,

Tom

Thomas H. Kierstead

AN ANALYSIS OF THE STRENGTHS AND WEAKNESSES OF THE HUMAN-RESOURCES DEVELOPMENT EFFORT AT ALDERSON-BROADDUS COLLEGE

Human Resources Development

Derek Crews
Alderson-Broaddus College

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A seminar paper presented to Programs for Higher Education
in partial fulfillment of the requirements for the
degree of Doctor of Education

Nova Southeastern University
January, 1996

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BACKGROUND OF THE INSTITUTION

Alderson-Broaddus College is a private four-year liberal arts college which was founded in 1871 and is located in Philippi, West Virginia. The College is affiliated with the West Virginia Baptist Convention and with the American Baptist Churches U.S.A. Enrollment is currently 850 students representing 30 states, and 8 foreign countries. Approximately 60% of the student body is from West Virginia. The College employs 192 individuals including 76 full-time faculty. Academic offerings include majors and minors in humanities, natural sciences, social sciences, health sciences, business, education, and music, as well as two Associate Degree programs, and a Master's program for Physician Assistants. Alderson-Broaddus recently came under new leadership when Dr. Steven Markwood was appointed the President in July, 1995.

MISSION STATEMENT

The mission statement of Alderson-Broaddus College was most recently revised in April, 1994. It is printed in the college Catalog, and is included as Appendix A (Alderson-Broaddus College, 1995a, p. 1).

IDENTIFICATION AND SEGMENTATION OF LEARNERS

Rothwell and Kazanas (1994) state that the first step in conducting a needs assessment pertaining to human resource development (HRD) is to identify learners to served by the HRD effort (p. 87). They suggest that HRD practitioners should then classify the learners into broad market segments, compare actual to desired knowledge and skills for each market segment of learners, and then identify present learning needs for each market segment (pp. 87-88). Schultz (1995) suggests that HR departments should elicit feedback from their customers (learners) regarding the customers needs, and then develop a prioritized plan for meeting these needs (p. 61).

In light of these statements, it seems appropriate to first categorize the learners (and prospective learners) served by Alderson-Broaddus College, before analyzing the strengths and weaknesses of the existing HRD effort, philosophy, and policies. Using a schema from Rothwell and Kazanas (1994), the learners can be divided into two broad groups: internal (employees), and external (non-employees) (pp. 89-96).

The internal category can be further classified by job market into the following groupings: administrators, full-time faculty, part-time faculty, staff, secretarial/clerical support, and maintenance/housekeeping.

The external category consists primarily of two groups: consumers (students) and alumni. The consumer grouping can be further divided into market segments, but this would be outside the scope of this paper.

These groupings will be utilized in conducting the analysis of HRD philosophies and policies, and the discussion regarding strengths and weaknesses in the remainder of this paper.

HUMAN RESOURCES DEVELOPMENT PHILOSOPHY AND POLICIES

A comprehensive needs assessment can involve a variety of data collection methods including interviews, surveys, observation, task analysis, performance/productivity measures, employee performance appraisals, assessment centers, group discussions, critical incident techniques, delphi procedures, and nominal group techniques (Rothwell and Kazanas, 1994, p. 98). The writer of this paper recognizes that the scope of this assignment is not a comprehensive needs analysis, but rather an analysis of the strengths and weaknesses of the overall HRD effort. Three techniques of data collection have been chosen for this assignment: an analysis of the Strategic Planning Document of Alderson-Broaddus College; an analysis of the HRD policies as referenced in the Faculty-Staff Handbook; and an interview with the President of Alderson-Broaddus College. I will be noting my observations regarding the first two data collection methods. These observations will then be categorized as either strengths or weaknesses later in this paper, under the heading: Analysis of Strengths and Weaknesses Pertaining to Implementation of HRD Philosophy and Policies. The information gathered through the interview with the President will be interspersed throughout the paper.

Strategic Planning Document

Overview

A copy of the most recent strategic plan of Alderson-Broaddus College has been obtained and reviewed. The plan is referred to by the college as the Strategic Planning Document (Alderson-Broaddus College, 1994). The most recent version of the plan is October, 1994. The administration of the college will be revising the plan in the spring of 1995 (S.E. Markwood, personal communication, December 18, 1995). The contents and sequence of the plan is: preface; an overview of the annual planning cycle; mission statement; institutional goals; assumptions; strategic areas of focus; plan for institutional assessment; and quantitative projections. I will briefly discuss four specific areas addressed in the plan that pertain to HRD. These are: demand projections, institutional goal number one, institutional goal number seven, and student retention.

Demand Projections for Teaching Faculty

The quantitative projection section of the Strategic Planning Document includes financial projections for five years. Numerous variables are included such as student enrollment, estimates on assets and debt, and current funds revenues and expenditures.

One variable related to HRD that is included is a demand projection for teaching faculty (full-time equivalent). Earlier in this paper, the job market was classified into six categories. The demand projection only addresses two of these categories: full-time faculty and part-time faculty. Demand projections are not included for categories such as administration, staff, secretarial/clerical support, or housekeeping.

It is also interesting to note that student enrollments are projected to increase in each of the five years projected. The actual projections and percentage growth are listed in Appendix B. The demand projection for teaching faculty is expected to increase by 5.5% the first year, decrease 1.3% the second year, and then no change is anticipated in the final three years. This appears to be inconsistent with the student enrollment projections. The faculty demand projections are not mentioned anywhere else in the Strategic Planning Document.

Institutional Goal Number One

Fourteen institutional goals are listed in the Strategic Planning Document. Goal number one is divided into four parts. Part D states that the college will attempt to meet the educational, professional, and personal needs of all employees. The complete text of all fourteen institutional goals is included in Appendix C. The goal also states that The Committee on Promotion, Tenure, and Sabbatical Leaves (and appropriate administrative offices) will carry primary responsibility for faculty-staff development. The Vice President of Academic Affairs has been designated as the college officer responsible for the implementation of this goal.

This goal (as it is written, not necessarily as it is implemented) impacts all categories of internal job market learners as identified earlier in the paper.

Institutional Goal Number Seven

Institutional goal number seven pertains to effective programs of college and alumni advancement. Refer to Appendix B for the complete text of institutional goal number seven. This goal impacts an important external category of non-employee learners. Section B of the goal specifically states that the

Alumni Office has the responsibility to meet the educational and professional needs of alumni. This goal is not mentioned or elaborated on anywhere else in the Strategic Planning Document.

Student Retention

The external learners were classified earlier into two categories: alumni, and consumers. One specific area of focus in the strategic plan is on student retention. Section III of the plan is titled: Strategic Areas of Focus For The Various Offices/Programs. Twelve administrative offices and all five of the academic divisions have submitted their one-year, two-year, and long-range goals, which were incorporated into the Strategic Planning Document. One of these offices is Campus Life, headed by the Vice President for Student Services. Reduction of annual student attrition is included as a one-year goal, a two-year goal, and a long-range goal.

Students transfer or quit college for a variety of academic, financial, and social reasons. Rothwell and Kazanas (1994) state that the purpose of non-employee development is to "change a firm's external environment by providing the knowledge and skills people need to deal with the firm or its products and/or services" (p. 38). Student retention could perhaps be enhanced through an HRD intervention directed towards helping students become fully aware of, and utilize, various offices on campus that could assist them in overcoming obstacles. These include the Financial Aid Office, the Academic Support Network, the Learning Resources Center, and their individual academic advisors.

Faculty-Staff Handbook

Section Three of the Faculty-Staff Handbook (Alderson-Broaddus College, 1995b) discusses several programs that the college offers that are related to HRD. These include: sabbatical leaves, educational leaves, faculty development funding, tuition waivers at West Virginia University, and tuition remission.

Sabbatical Leaves

Sabbatical leaves are available to full-time tenured faculty above the rank of instructor who have completed at least seven years of teaching service. Sabbaticals may by at full-pay for one semester or half-pay for two semesters. They are evaluated based on their merit as a professional growth opportunity, and on their significance to the institution. This program impacts only one of the six categories of the internal job-market learners.

Educational Leaves

Educational leaves are available to all classes of employees except for maintenance/housekeeping. Educational leaves are without pay, although the employee may apply for a loan with a forgiveness feature for years of service after the leave period.

Faculty Development Funding

The college encourages and supports graduate study by teaching faculty through a loan program with a loan forgiveness feature for continued service. The primary focus of the program is to increase the percentage of faculty who have terminal degrees. One major grant, in the amount of $12,500 is awarded each year to a faculty member who is working towards a terminal degree. Smaller grants (under $2,500) are awarded for other faculty development such as post-doctoral study and research. Full-time teaching faculty are the only employees impacted by this program.

Tuition Waivers at West Virginia University

West Virginia University, through a program authorized by the West Virginia State Legislature, has a policy of waiving tuition for a designated number of full-time faculty staff accepted as graduate students. Full-time faculty and staff personnel of Alderson-Broaddus College are eligible for the tuition waivers.

Tuition Remission

All employees of the college are eligible for tuition remission benefits. Each employee can enroll for one course per semester and attend classes during working hours, without making up the time, and at no charge. Additional courses can be taken at no cost, but any work hours missed must be made up, and the schedule must be approved by the employee's supervisor.

SUMMARY OF STRENGTHS AND WEAKNESSES PERTAINING TO IMPLEMENTATION OF HUMAN RESOURCE DEVELOPMENT PHILOSOPHY AND POLICIES

Summary of Strengths

1. The importance of education and development of all employees, as well as non-employees (specifically consumers and alumni) is recognized in the strategic plan.
2. Funding is allocated for development of teaching faculty through an endoment and is allocated for other employees through tuition waivers and tuition remission.

3. The college administers several programs in order to provide employees the opportunity to pursue further education, through sabbatical leaves and educational leaves.

4. The college attempts to project demand for teaching faculty for the next five years, as part of the quantitative projections in the strategic plan.

Summary of Weaknesses

1. The college does not attempt to project the supply of teaching faculty, and the demand projections appear to be inconsistent with the student enrollment projections. According to President S.E. Markwood (personal communication, December 18, 1995), these projections are currently being revised. The new strategic plan will include three different scenarios: growth, no-growth, and decline. The number of teaching faculty required over the next five years, even under the growth scenario, is nine fewer than the college currently employs. Sean Rush, who heads a division of the accounting firm Coopers and Lybrand that focuses on non-profit organizations states: "Most institutions can't afford to be what they've become. And when they can no longer afford it, they begin to cut back on people" (Nicklin, 1994, p. A37). This is the situation currently faced by Alderson-Broaddus College.

2. The college does not engage in work-force planning, beyond the demand projections for faculty. Work-force planning should contribute to the successful accomplishment of an organization's strategic goals and business objectives (Ripley, 1995, p. 84). It is a process that should analyze the skills needed in the future, not just the number of employees.

3. The strategic plan lists areas that the college will emphasize, but some of these, such as the educational needs of alumni, are not mentioned in any other part of the plan.

4. The HRD effort appears to be reactive in some cases. E.G., the tuition waiver program was authorized by the state legislature, and is not anything that was planned as a part of the overall HRD effort of the college.

5. The college lacks an overall HRD purpose that integrates the philosophy and policies pertaining to the education and development of all employees and non-employee learners.

CONCLUSION

President Markwood has indicated that the greatest weakness of Alderson-Broaddus College is that it has had no vision for the future. Kaufman and Herman (1991) have described strategic planing as "long-range planning with a vision" (p. 41). By this definition, the existing Strategic Planning Document is really a long-range planning document. President Markwood has developed a vision statement for the college, which is included as Appendix D (Alderson-Broaddus College, 1996). The HRD effort at Alderson-Broaddus should be integrated with the new vision statement and the new strategic plan that will be developed in the spring of 1995. A clear HRD purpose should be defined, and HRD interventions should be planned that will help lead to competitive advantages in the area of human resources.

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APPENDIXES

Appendix A

Mission Statement of Alderson-Broaddus College

Alderson-Broaddus College is an independent institution of higher learning dedicated to providing education of the highest quality, with selected programs in the health sciences, social sciences, humanities, natural sciences, and education. All programs are based on a strong liberal arts foundation which prepares students for responsible citizenship and lifelong learning.

Rooted in historic and continuing relationships with American Baptist Churches U.S.A., the College encourages the academic goals of the acquisition of knowledge, freedom of intellectual inquiry, and critical thinking. It also encourages Christian values, including reasoned religious belief, personal moral integrity, and humanitarian service to others.

The College is a caring community which strives to meet the intellectual, spiritual, social, psychological, and physical needs of students. Alderson-Broaddus College is committed to serving the region as an academic, cultural, and religious resource.

Appendix B

Enrollment and Faculty Demand Projections

Projected Student Enrollment

Academic Year	Total Enrollment	Percentage Growth Compared to Prior Year
1994-95	885	4.1%
1995-96	903	3.5%
1996-97	916	2.0%
1997-98	946	3.7%
1998-99	947	0.1%

Projected Faculty Demand (Full-Time Equivalent)

Academic Year	Number of Faculty	Percentage Growth Compared to Prior Year
1994-95	76	5.5%
1995-96	75	-1.3%
1996-97	75	No Change
1997-98	75	No Change
1998-99	75	No Change

Appendix C

April 1994

INSTITUTIONAL GOALS

1. **To continue to provide and to develop both traditional and innovative means of meeting the educational needs of various and appropriate constituencies such as recent high school graduates, adult first-time college enrollees, in-service professionals, faculty and staff, alumni, and long-distance learners.**

   A. Committees and offices of the college will perform all duties related to this goal, as outlined in the Faculty-staff Handbook and in the Committee Handbook.
   B. The Admissions Department will report to appropriate administrators interests expressed by potential students but not included in current offerings of the college.
   C. All components of the college will suggest to appropriate administrators innovative methods of meeting educational needs of college constituencies.
   D. The Committee on Promotion, Tenure, and Sabbatical Leaves and appropriate administrative offices will carry primary responsibility for faculty-staff development to the end that educational, professional, and personal needs of all employees of the college may be met directly or by referral.

2. **To bring all academic programs to highest possible quality so that all graduates are responsible and productive members of their work forces or professions and their communities.**

   A. Every academic program will be evaluated thoroughly at least once every four years by the Division within which the program is administered, with objective measures being used as the basis for that evaluation, e.g., standards of accrediting agencies or professional organizations.
   B. Recommendations for changes to effect improvement in academic programs will be made through the responsible Division to the appropriate committee or administrator, these recommendations, if approved and as appropriate, to be forwarded to the faculty-staff and to the Board of Trustees.

3. **To provide a Liberal Arts foundation for all undergraduate curricula and to include therein courses in religion and philosophy.**

   A. The Academic Program Committee will conduct thorough and periodic (at least once every four years) evaluation of the Liberal Studies requirements of the college and will monitor the effectiveness of the program.
   B. The Division of the Humanities will carry responsibility for the offering of Liberal-Studies-oriented courses in religion and philosophy.

   C. Recommendations for changes in the Liberal Studies requirements will be processed through the Academic Program Committee to the faculty-staff and, if appropriate, to the Board of Trustees.

4. **To maintain institutional accreditation through The Commission on Institutions of Higher Education of the North Central Association.**

   A. All components of the college will achieve and maintain standards necessary for accreditation.
   B. All components of the college will maintain records needed for accreditation.
   C. Administrative and financial support will be provided to allow for planning and implementation of accreditation reviews and visits.

5. **To acquire and/or maintain accreditation for selected academic programs as determined by the faculty-staff.**

   A. Academic areas selected by the college to be appropriate for accreditation by professional organizations will be directed to reach and maintain the standards of those organizations.
   B. Administrative and financial support will be provided to allow for accreditation of those selected programs.

6. **To recruit, retain, and graduate able students for all majors offered by the college.**

   A. The Admissions Department will carry primary responsibility for recruitment of able students.
   B. The Admissions Committee will carry primary responsibility for recommending policy pertaining to recruitment and retention of able students.
   C. Recommendations for changes in admissions policy to effect recruitment and retention of able students will be channeled through the Admissions Committee to the faculty-staff and, if appropriate, to the Board of Trustees.

7. **To maintain effective programs of college and alumni advancement.**

   A. The Development Office will carry primary responsibility for development of resources to provide for all college operations approved by the Board of Trustees.
   B. The Alumni Office will carry primary responsibility for development and maintenance of productive relationships with alumni, to the end that both the support needs of the college and the educational and professional needs of alumni may be met.

8. **To provide curricular and extra-curricular activities and organizations as opportunities for intellectual development, wholesome personal expression, social interaction, and leadership development.**

   A. All academic departments and divisions will organize and advise curricular and/or extra-curricular activities that provide teaching-learning and/or pre-professional experiences.
   B. Appropriate offices and committees of the college (e.g., Student Activities Committee) will organize and advise extra-curricular activities that will provide opportunities for wholesome personal expression, social interaction and leadership development.
   C. Recommendations for improvement of opportunities described in the goal will be channeled through the Campus Life Committee or the academic divisions or the Office of the Academic Dean or the Dean of Student Life.
   D. On-campus experiences will be enriched through interaction with experts from outside the campus.

9. **To develop and maintain relationships with agencies and organizations through which humanitarian service can be encouraged and effected by all members of the college community.**

   A. Appropriate offices and academic areas (e.g., Nursing, Campus Life) will establish and maintain working relationships with community agencies and organizations which need and invite humanitarian service.
   B. Appropriate academic areas will be encouraged to develop internships which will accomplish both humanitarian service and academically valid learning experiences.
   C. The Public Relations office will announce efforts toward humanitarian service, to the end that such service is encouraged throughout the college.

10. **To encourage all members of the college community to confront major political, social, and environmental issues in their communities and throughout the world.**

   A. All academic areas will be encouraged to include in classroom and extra-classroom experiences materials and outside speakers concerned with major political, social, and environmental issues.
   B. The Campus Life Department will encourage students to become responsible citizens of their communities and their world.
   C. The student broadcasting organizations and the student newspaper will be encouraged to include in their programming and publication a focus on political, social, and environmental issues.

11. **To encourage the practice of Christian values in all phases of college operations.**

    Recommendations for improvement of operations in terms of the practice of Christian ethics will be processed through supervisors in various areas of college operation (e.g., Division chairpersons, Director of External Education, Business Manager) and, if appropriate, to faculty-staff and the Board of Trustees.

12. **To carry out regular, periodic evaluation of all college employees, services, and academic programs.**

    A. All offices of the college will schedule and implement regular evaluation of employees, services, and programs.
    B. Such evaluations will be reviewed in a timely manner with the personnel involved, to the end that improvement of operations and personal and professional development are realized.

13. **To maintain cooperative relationships with American Baptist Churches in the U.S.A. and with the West Virginia Baptist Convention and other related American Baptist constituencies.**

    A. The Admissions Department will be encouraged to recruit through American Baptist churches and organizations.
    B. All members of the faculty and staff will be encouraged to render service as appropriate to American Baptist churches and organizations.
    C. Active contact will be maintained through the Ministers Advisory Council, the Board of Trustees, and the office of Church Ministries with local Baptist churches of West Virginia, Pennsylvania, Delaware, and Ohio.

14. **To conduct stratetic planning on a continuing basis in order to ensure the integrity and viability of the institution.**

    A. The strategic planning committee will continue to identify assumptions affecting the operation of the College and to communicate these to the various departments/divisions of the College.

    B. Annual planning in each department/division will take into consideration the current strategic plan and its assumptions.

******

BEST COPY AVAILABLE

Appendix D

ALDERSON-BROADDUS COLLEGE'S
VISION
for the
THIRD MILLENNIUM

Building on its strong American Baptist heritage, rooted in the West Virginia Baptist Convention, and cognizant of its Appalachian tradition, Alderson-Broaddus College aspires to become the finest coeducational, residential, church related, liberal arts college in the north central area of the Appalachian region, as it boldly enters the third millennium.

Moving strongly into new geographic areas of service in southwestern and south-central Pennsylvania, western Maryland, southeastern Ohio, and the Charleston/Huntington corridor, A-B will academically diversify into business, computer science, and education while maintaining its current academic strength in the allied health sciences, natural sciences, and music. While expanding its exceptional technological base, A-B will implement new opportunities in distance learning, telemedicine, and video technology. By refurbishing Kemper Hall, Benedum, Paul Jones, and Priestley/East residence halls, and Pyles Arena, building a new performing arts center, and carefully landscaping its beautiful grounds, A-B will provide the finest private college campus facilities in West Virginia. A-B will continue to add to and carefully manage its endowment fund, including funds held in trust, growing to a sum of $15,000,000 by the year 2000 with funding specifically designated for faculty chairs and student scholarships. To properly prepare our graduates for leadership service in the twenty-first century, we will encourage analytic/critical thinking ability, computer, speaking, and written communications skills, human relations techniques, and a value-center decision-making foundation model within all our academic programs.

Drawing on its family orientation, A-B will increasingly empower its faculty, students, and staff to resize our academic, fiscal, facility, and personnel resources to fulfill our selected strategic mission of providing a Christian liberal arts education with a vocational orientation in tune with our surrounding rugged Appalachian milieu. Alderson-Broaddus College's moral compass will be fostered in Proverbs 29:18, "Where there is no vision, the people perish".

12/28/95

Appendix E

Derek E. Crews

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10 Greystone Dr.
Philippi, West Virginia 26416
Home (304) 457-1398
Office (304) 457-6319

EXPERIENCE

8/94 - Present **Assistant Professor of Business Administration**
Alderson Broaddus College, Philippi, West Virginia
Primary responsibility includes teaching the following courses:

American Economy
Business Law I
Business Law II
Computers in Business
Ethics in Business
Health Care Administration
Health Insurance
Introduction to Business
International Business
International Marketing
Labor Relations
Production/Operations Management
Small Business Management/Entrepreneurship

Teaching responsibilities include curriculum planning, instructional design, delivery, and evaluation for the above courses. Also serve as personal academic advisor for approximately twenty students, and serve on various faculty committees. Secondary responsibilities include assisting the admissions department in recruitment of new students (for example high school visitations), working with student organizations and clubs, participation on a business advisory council, and teaching in the Degree Completion Program (adult education night program). Participated in a complete revision of all business curriculum and programs during the 1994-1995 academic year.

Fall, 1993 **Adjunct Professor**
Southeastern Oklahoma State University, Durant, Oklahoma
Instructor for a three credit hour night class in Production/Operations Management. Provided the opportunity for me to gain teaching experience, and have some exposure to teaching prior to entering the field full-time.

5/86 - 8/94 **Vice President, Finance**
TPS Freight Distributors, Inc., Dallas, Texas
Manager of all accounting functions including general ledger, accounts receivable, accounts payable, payroll, and financial statement preparation. Areas of responsibility included cash management, taxation, banking and lending relationships, financial projections, budgeting, operations analysis, employee benefits, insurance, data processing, and facilities management. Began as Director, Administration; promoted to Controller in 1989; promoted to Vice President, Finance, in 1992.

8/85 - 5/86 **Account Representative**
Harris-Lanier Corp.
Marketing of dictating and transcription equipment primarily to the legal and medical markets. Developed sales leads through telemarketing and on-site canvassing, performed sales demonstrations, installed equipment, and trained end-users. Decided to return to the field of financial and administrative management, but this experience has been very valuable to me in teaching the marketing aspects of several business courses.

2/85 - 8/85 **Branch Office Manager**
Gelco Space, Dallas, Texas
Managed accounts payable, accounts receivable, and trailer maintenance.

4/84 - 11/84 **Manager, Administration**
Coast to Coast Transportation, Inc., Denison, Texas
Responsible for supervision of the following functions: billing, payroll, accounts receivable, fuel tax, insurance, and administrative services.

2/82 - 4/84 **Supervisor, Administration**
C.A. White Trucking Co. Inc., Dallas, Texas
Began as accounts receivable collector. Promoted to position as supervisor of billing, payroll, collections, fuel tax, and administrative services.

EDUCATION

University of North Texas, Denton, Texas
Master of Business Administration, August, 1993
Specialty Field: Human Resources Management
GPA: 3.7

University of North Texas, Denton, Texas
Bachelor of Science in Business Administration, June, 1990
GPA: 3.4

HONORS

Golden Key National Honor Society
Gamma Beta Phi Academic Honor Society
Who's Who in Finance and Industry
Who's Who in the Southwest
Member of the Month, Barbour County Chamber of Commerce, September, 1995

PROFESSIONAL DEVELOPMENT

"Teaching International Business" Seminar, July, 1995 (one week seminar sponsored by Department of Education).

"Teaching Human Rights and Ethics in International Affairs," November, 1995 (three day conference sponsored by West Virginia Consortium for Faculty and Course Development in International Studies)

INDUSTRY TRAINING SEMINARS

Lotus 1-2-3
Database Programming
Accounts Receivable Collections
Administrative Management
Customer Service

BUSINESS CURRICULUM (credit hours)

	Masters	Undergraduate
Accounting	3	12
Business Communications	-	9
Business Law	-	6
Economics	-	6
Finance	3	6
Human Resource Management	15	3
Management	-	12
Management Science	3	9
Marketing	6	3
Strategic Management	3	3
Organizational Behavior	3	-

COMMUNITY SERVICE

Former School Board Trustee: Pottsboro Independent School District, Pottsboro, Texas
Coaching: Pee Wee Sports
Teacher in College/Career Sunday School Class (1986-1993)
Past Member of Personnel Committee and Finance Committee: Local Church
Volunteer: West Virginia Special Olympics

REFERENCES

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Alderson-Broaddus College
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David Whitlock
Chairman, Department of Management and Marketing
College of Business
Southeastern Oklahoma State University
Station A, Durant, Oklahoma 74701
(405) 924-0121 ext. 2683

A VISION OF A PROGRAM FOR LEARNING DISABLED STUDENTS AT ALDERSON-BROADDUS COLLEGE

Human Resources Development

Derek Crews
Alderson-Broaddus College

Toni L'Hommedieu
Western Pennsylvania Cluster

A seminar paper presented to Programs for Higher Education
in partial fulfillment of the requirements for the
degree of Doctor of Education

Nova Southeastern University
February, 1996

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CONTEXT

Setting

Alderson-Broaddus College is a private four-year liberal arts college founded in 1871 and located in Philippi, West Virginia. The College is affiliated with the West Virginia Baptist Convention and with the American Baptist Churches U.S.A. Enrollment is currently 850 students representing 30 states, and 8 foreign countries.

Issues

Increasing numbers of students with learning disabilities are pursuing higher education in the United States. Brinckerhoff and McGuire (Ryan and McCarthy, 1994) report that since 1985, the percentage of students with learning disabilities has escalated faster than any other category of disability, rising from 15 percent in 1985 to 25 percent in 1992 (p. 68). Vogel and Adelman (1992) state that the number of college students with learning disabilities has more than doubled in the last decade (p. 430).

The influx of learning disabled students into higher education presents many challenges for colleges. Colleges must ensure that admissions and academic policies and procedures comply with federal legislation, and must make accommodations for the students in many instances. Scott (1994) explains that faculty are ill-prepared for this challenge, and often lack the necessary experience, training, or skills to address the problems (p. 403). A study by Brinckerhoff, Shaw, and McGuire (1992) shows that learning disabled students often lack effective study habits and basic skills that are essential to college success (p. 418). This paper addresses the nature of this problem at Alderson-Broaddus College. The environmental variables will be discussed, followed by the scope and depth of the problem. Conclusions will then be presented regarding the need for an action plan to effect a positive solution to this problem.

VISION

Environmental Variables

Legal and Regulatory

Americans with Disabilities Act

Institutions of higher education are required to ensure equal access to education for individuals with disabilities according to Title III of the Americans with Disabilities Act (1990), commonly referred to as the ADA. The ADA defines an individual with a disability as someone with a physical or mental impairment that substantially limits a major life activity, and specifically states that learning is a major life activity. Colleges are required to provide reasonable accommodations to individuals with learning disabilities, at no expense to the student. However, higher education attorney N.W. Brown (personal communication, November 11, 1994) states that colleges are not required to offer accommodations that would fundamentally alter the program, or waive any program requirement deemed essential.

Rehabilitation Act of 1973

Section 504 of the Rehabilitation Act (1973), commonly referred to as Section 504, requires postsecondary institutions receiving federal financial assistance (including student loan programs) to "make such modifications to its academic requirements as are necessary to ensure that such requirements do not discriminate or have the effect of discriminating, on the basis of handicap, against an otherwise qualified handicapped applicant or student." Scott (1994) indicates that institutions must modify academic requirements that are discriminatory, but are not required to lower academic standards or compromise the integrity of the school or program (p. 404). Modifications and accommodations that might be necessary under both ADA and Section 504 will be discussed later in this paper.

Social and Demographic

Brinckerhoff and McGuire (Ryan and McCarthy, 1994) state that parents, students, and advocates are more informed about the legal rights of individuals with learning disabilities, and are exerting increased pressure upon colleges to provide services and accommodations (P. 69). A 1975 federal law requires public schools to offer free services to any disabled student, and requires the school to identify these children. Shea (1994) reports that students who began school since 1975 are more likely to have had their disabilities identified, and to know their rights (p. A53).

Scope of the Problem

Types of Learning Disabilities

The Association on Higher Education and Disability (1991) defines a learning disability as "a disorder which affects the manner in which individuals with normal or above average intelligence take in, retain, and express information". They include in their definition "students that exhibit deficits in oral expression, listening comprehension, written expression, basic reading skills, reading comprehension, mathematical calculation, or problem solving." The disorder may be specifically diagnosed, e.g., dyslexia or attention deficit disorder, or it may be more vague, in which case it is not specifically identified, but is proven to exist through performance on standardized tests.

Policies of Alderson-Broaddus College

Alderson-Broaddus College does not have a comprehensive policy concerning educational access for students with learning disabilities. The College does have three individual policies, which could be thought of as free-standing policies, i.e., they are not a part of any larger document or publication, such as the College Catalog, the Student Handbook, or the Faculty-Staff Handbook. The first policy is the Admissions Policy Regarding Students With Disabilities (Alderson-Broaddus College, 1995a), and is found in Appendix A. The second policy is the Criteria for Admitting Learning Disabled Students (Alderson-Broaddus College, 1995b), and is found in Appendix B. The third is the Learning Disabled Students policy (Alderson-Broaddus College, 1995c), and is found in Appendix C. The focus of this last policy is the procedure that a learning disabled student must follow to receive accommodations from the College. All of the existing policies were issued by the Office of Student Services, after approval by the faculty and the President. According to D. Stull, Vice-President of Student Services (personal communication, January 23, 1996), Alderson-Broaddus College currently needs a comprehensive policy that will outline the rights and responsibilities of the College, applicants, and students, regarding equal access to education under the ADA and Section 504.

Resources of Alderson-Broaddus College

Many large colleges and universities have offices designated solely to assist disabled students. Georgann duChossois, coordinator of New York University's program for learning disabled students, believes that many small colleges rely on one faculty member or general administrator to handle decisions and programs for the learning disabled (Shea, 1994, p. A55). Alderson-Broaddus is a good example of this. The College relies on a faculty member in special education, and the Vice President of Student Services to make decisions regarding admission and necessary accommodations for learning disabled students. The College also has a Learning Resource Center that provides tutoring and testing for students that require this type of assistance. Other accommodations, such as books on tape, are handled through the Office of Student Services. Diagnostic testing is generally provided through a qualified professional not affiliated with the College.

Depth of the Problem

The requirements of Section 504 and the ADA require postsecondary institutions to examine compliance from a variety of viewpoints. These include admissions, identification and assessment of learning disabled students, accommodations, and faculty awareness and competency.

Admissions

Section 504 of the Rehabilitation Act (1973) prohibits postsecondary institutions from making preadmission inquiries concerning disabilities. Applicants must meet the academic and technical standards for admission into the program. However, requirements must not be a pretext for discrimination. The institution is required to determine whether an otherwise qualified handicapped student can meet the requirements of the program, with or without accommodation. The ADA (1990) requires that schools judge students on the basis of their ability to complete the educational program, in spite of their disability, with or without accommodations.

Identification and Assessment

Brinckerhoff and McGuire (Ryan and McCarthy, 1994) state that it is "imperative for a service provider to carefully review the diagnostic testing before a student with a documented learning disability receives appropriate accommodations or support services" and that the testing should evaluate whether the student has the ability to perform college-level work successfully (p. 76-77). The Heath Resource Center, a national clearinghouse on postsecondary education for individuals with disabilities, makes a distinction between evaluation, testing, diagnosis, and recommendations (National Resources for Adults with Learning Disabilities, 1994). A complete discussion of these steps is outside the scope of this paper. However, it should be noted that Heath recommends a screening process, followed by diagnostic testing by a qualified individual, a diagnostic statement of the specific type of learning disability, and then recommendations of instructional strategies that will be most successful for this student. This will help schools to avoid applying a blanket set of accommodations to all learning disabled students.

Accommodations

Scott (1994) recommends that accommodations be based on documented individual student need (p. 410). Brinckerhoff and McGuire (Ryan and McCarthy, 1994) identify several accommodations that colleges may be required to provide and pay for. These include tape-recorded textbooks, tutors, note-taking assistance, permission to tape record classes, testing accommodations (extended time, alternate formats such as oral examination, essay rather than multiple choice, or a reduction in the volume of material covered on one test), and program modifications, such as waiving a course requirement (p. 80-82). One aspect of this issue that is generating legal disputes and confusion is whether the student or the school has the final say on what accommodation will be provided. Disability Compliance for Higher Education ("Auxiliary Aids," 1995) reports that private schools are given the right to make the final determination regarding what constitutes a reasonable accommodation (p. 8). However, Heyward

(1992) has noted that the standard of reasonable accommodation is not an objective compliance standard, and calls it "the legal equivalent of the Rubik's Cube" (p. 7).

Faculty Awareness and Competency

Faculty are increasingly finding that they have learning disabled students enrolled in their classes, and are requested to make accommodations. Shea (1994) states that requests such as extra time on a test, or loosening of academic requirements are quietly granted. But he also points out that "grumbling among professors about the concessions has become commonplace, if discreet" (p. A53). A recent court case illustrates the possible ramifications of denying accommodations. Zirkel (1994) reports that a high school instructor in West Virginia was fined $5,000 in compensatory damages and $30,000 in punitive damages for denying testing accommodations for a diagnosed learning disabled student (p. 652-653). This case did not directly involve a postsecondary institution, but Section 504 and the ADA apply to both secondary and postsecondary schools.

This writer's experience as a faculty member at Alderson-Broaddus College is that few of the professors have an understanding of learning disabilities. Faculty should receive training regarding specific learning disorders and learn how instructional strategies can be modified to better teach learning disabled students. Administrators and faculty should have an awareness of the needs of learning disabled students, and understand the rights and responsibilities of applicants, students, and their institution. They should know what is required to comply with both Section 504 and the ADA. Professional development seminars might be one alternative for educating faculty regarding these issues.

CONCLUSION

The increasing number of learning disabled students is presenting many challenges for administration and faculty in postsecondary institutions. A model has been developed to help facilitate comprehension of the many issues involved (see Appendix D, p. 23).

The outer circle of the diagram in Appendix D represents the main factors in the external environment that are shaping the context of the problem. These include legal factors, specifically Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990. Programs for learning disabled students in postsecondary institutions must comply with these regulations. The other variable is social trends. This refers to increasing awareness by learning disabled students, regarding the nature of their disability, and their rights under federal law.

The middle circle represents the main components of the internal environment in a postsecondary institution. These are faculty, staff, and the learning disabled student. Any program for learning disabled students should foster communication among these three groups, and should address awareness, training, and competency of all individuals involved.

The inner circle represents the process that should occur in a postsecondary institution. The process begins with the admission of the student. The college may not inquire about learning disabilities prior to admission. Once admitted, the student must notify the school that he or she is learning disabled. A qualified professional should then conduct an evaluation of the student, including a review of prior testing. Depending on the recency of the documentation, the school may require new testing and diagnosis. The qualified professional should also make recommendations regarding what modifications in the program, specific instructional strategies, and other accommodations will help the student to be successful. The accommodations should be individualized for each student, rather than using a blanket set of accommodations, and should be determined only after all of the previous steps in the process have been completed. They should address the concerns of all individuals in the internal environment (faculty, staff, and students), and should comply with the mandates of federal law.

The challenge facing Alderson-Broaddus College is to develop a comprehensive learning disability program that will implement the process described in the diagram. The program must comply with the stipulations of federal law, and should utilize an individualized approach. Each learning disabled student is unique, and requires accommodations tailored to his or her specific situation. A multi-year action plan is necessary to accomplish the vision of a complete learning disability program that ensures compliance with federal law, and meets the individual needs of learning disabled students.

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APPENDIXES

Appendix A

ADMISSIONS POLICY REGARDING STUDENTS WITH DISABILITIES

Section 504 of the Rehabilitation Act of 1973 (as implemented by Title 34, Code of Federal Regulations, Part 104)

Postsecondary institutions receiving federal financial assistance "shall make such modifications to its academic requirements as are necessary to ensure that such requirements do not discriminate or have the effect of discriminating, on the basis of handicap, against an otherwise qualified handicapped applicant or student."

"In its course examinations or other procedures for evaluating students' academic achievements in its program ... (postsecondary institutions) shall provide such methods for evaluating the achievement of students who have a handicap that impairs sensory, manual, or speaking skills as will best ensure that the results of the evaluation represent the student's achievement in the course, rather than reflecting the student's impaired sensory, manual or speaking skills (except where such skills are the factors that the test purports to measure).

Otherwise qualified handicapped student - "a handicapped person who meets the academic and technical standards requisite to admission or participation in the recipient's education program or activity."

> Technical standards - all nonacademic admission criteria that essential for participation in the program in question.

Therefore, disabled students must meet all academic and nonacademic criteria for admission and continued participation in spite of their disability. In addition, postsecondary institutions are prohibited from making preadmission inquiries concerning disabling conditions, unless such information is optional and unless the purpose of the question is to correct past discrimination. However, postsecondary institutions are required to provide educational auxiliary aids ("reasonable accommodations") to students with impaired sensory, manual, or speaking skills, once the student has been admitted, and once the student has provided appropriate and current documentation of the disability. Institutions are not required to provide accommodations or auxiliary aids which place an "undue burden" on the institution, (significant difficulty or expense) or which would require a fundamental alteration in the program or academic standards, or which "devices or services of a personal nature." "Academic requirements that the (postsecondary institution) can demonstrate are essential to the program of instruction being pursued by such student or to any directly related licensing requirement will not be regarded as discriminatory." It is, therefore, the prerogative of the institution to decide what requirements are essential, so long as each requirement has a rational relationship to the program of instruction and is not a pretext for discrimination.

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In general, then, it appears that where a disability directly relates to and limits essential skills and abilities, the disabled student will not be considered qualified. However, where auxiliary aids and academic adjustments will facilitate learning and not relieve the student of developing the essential skills and abilities, the student will be considered qualified. Further, even when a disabled student is qualified and the academic adjustments and auxiliary aids are provided, it is not required that these services produce the identical results or level of achievement as obtained by nondisabled students. The focus of such services is to afford disabled equal opportunity to obtain the same results or achievements.

The Americans with Disabilities Act of 1990 (Title III)

The ADA Protects any individual with a physical or mental impairment (a physiological or mental disorder) that substantially limits that person in some major life activity, and any individual who has a history of (i.e., if the person had an impairment that he or she no longer has or if an individual was misdiagnosed as having an impairment that the person actually does not have) or is regarded as having (persons whose impairment has the effect of limiting them in a major life activity only because the attitudes of others towards the impairment, as well as those who are treated as having an impairment when they actually do not have one), such an impairment. An impairment substantially limits an individual in a major life activity (e.g., walking, seeing, speaking, breathing, learning, working or performing manual tasks) if the person cannot perform the life activity at all, or if the individual is limited in the condition, manner or duration of that activity.

With regard to admissions, the ADA essentially requires that schools judge persons on the basis of their ability to complete the educational program (i.e., their ability to perform the "essential functions" of the program in spite of the disability) rather than on their status as disabled persons.

Specific Admissions Issues

Must have a policy in place that prevents discrimination on the basis of disability in the admissions process. The College and each program within the College should carefully scrutinize the tests and criteria on which they base admissions in order to make sure that these materials accurately measure an applicant's ability to perform the essential functions of the particular academic program. May be required to demonstrate that tests we use for admissions have been validated as a predictor of success in the particular program and that an identified alternate test, which has less of a discriminatory impact, is not available.

It is legal to require documentation of a disability in the admissions process if the applicant places his/her disability at issue. In addition, once a student has been admitted, the College may ask a particular student whether he/she has a disability which may require reasonable accommodation.

In providing reasonable accommodations, the College need not change its fundamental program requirements, and the College may consider whether the applicant would be able to practice in their field of training. (e.g., College need not waive clinical requirements for nursing student with a serious hearing impairment because such skills are an essential part of nursing education.) Thus, a student who, by virtue of his or her disability, is unable to perform necessary tasks, with or without reasonable accommodation, is not "otherwise qualified." It is therefore appropriate for the College, in determining whether a student is "otherwise qualified", to be advised of and to take into account the mental impairment of a student applying for the nursing program, for example, since it is directly relevant to the student's qualifications and bears upon the student's ability to function as a student and as a nurse. The College may thus make a determination that an applicant's handicap would preclude him/her from carrying out the responsibilities involved in medical education and future patient care, and may rightfully exclude that student from the program after weighing the implications of his disability. However, if certain tasks required for a program are only marginally relevant to the program's purpose, the College may have to reasonably accommodate a student with respect to such a requirement (e.g., essay tests rather than multiple choice tests for a dyslexic student).

It would therefore be advisable for the faculty of the nursing program, the medical science program, the teacher education program, and perhaps other programs, to define the "essential functions" of the curriculum, and to develop criteria and procedures for the selection of students, which should be published and available to potential applicants and to their collegiate advisors. In the process of defining the "essential functions" of the curriculum, each course and required activity should be evaluated as to its contribution to the level of skill and knowledge required of all students as a prerequisite to the award of the degree; i.e., is the course or activity legitimately required of all students because of its essential contribution to a necessary skill?

In addition, these programs should develop and publish technical standards for the admission of handicapped applicants in accordance with legal requirements. These standards should refer to desired ends rather than the means to achieve the standard, since a disabled student may be able to achieve the required end using reasonable accommodation. These standards should represent the minimum physical, cognitive, and behavioral requirements for the satisfactory completion of all aspects of the curriculum and the development of professional attributes required by the faculty of all students at graduation.

Appendix B

Criteria for Admitting Learning Disabled Students

In addition to the regular admission requirements, students who have identified themselves as Learning Disabled, and who are applying for admission to Alderson-Broaddus College and requesting accommodations for their learning disability, shall meet the following requirements:

1. They shall submit or have on file with Alderson-Broaddus College the results of the Wechsler Adult Intelligence Scale (WAIS) to determine aptitude. This must be accompanied by a written psychological evaluation, including a discrepancy analysis, completed by a licensed psychologist, documenting the specific learning disability or disabilities.
2. They shall submit letters of reference from the applicant's high school subject area advisor and Learning Disabilities teacher (or from the applicant's academic advisor and learning services coordinator if a transfer student) verifying the candidates's potential to complete a college curriculum.
3. They shall submit the results of an untimed SAT or ACT.
4. The candidate shall have a personal interview with the Vice President for Student Services or his/her designee.

Appendix C

LEARNING DISABLED STUDENTS

The prevalence of learning disabled students attending postsecondary institutions has increased dramatically since Section 504 of the Rehabilitation Act went into effect. It has been estimated that 14% of the nations's entering college freshmen are learning disabled. These college students may exhibit discrepancies between ability and achievement in academic areas, and may also exhibit some difficulties in processing information. These difficulties may include memory problems, disorganization, perceptual motor problems, difficulty in relating to others, short attention span, and extreme dependency.

During the past several years, Alderson-Broaddus College has begun providing accommodations for students with learning disabilities.

Process for Obtaining Academic Support

1. The college does not provide assessment services for possible learning disabled students.
2. The student must provide documentation of a learning disability in order to secure any accommodations for his/her disability. This documentation must include:
    a. The results of the Wechsler Adult Intelligence Scale (WAIS)
    b. A written evaluation, including a discrepancy analysis, completed by a licensed psychologist or certified learning disability specialist, indicating the specific learning disability or disabilities. This evaluation must be no older than three (3) years.
3. Documentation must be sent to the Vice President for Student Services.
4. A follow-up questionnaire will be sent to the licensed psychologist or certified learning disability specialist in order to determine specific discrepancies between achievement and intellectual ability, methods used for determining discrepancy, to exclude other causes of the learning deficit such as visual, hearing, or motor disability, mental retardation, emotional disturbance, and environmental or cultural disadvantage.

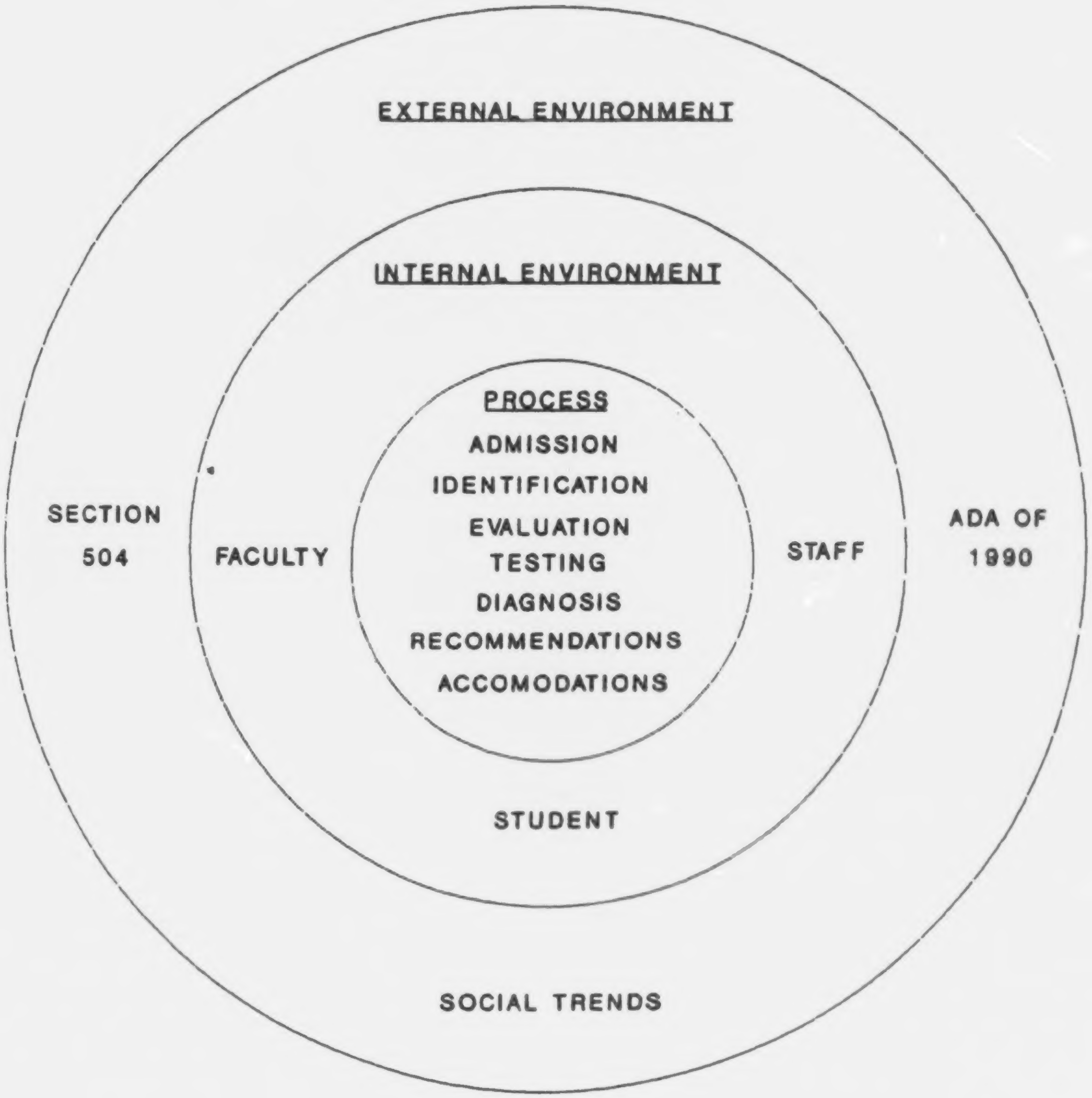
5. A committee consisting of the Vice President for Student Services, the student's academic advisor, the 504 coordinator, the Director of Learning Resources, the student, and, at the student's request, an advocate for the student, will be convened and a plan of academic support and reasonable accommodation devised by this group.

6. A follow-up letter will be sent to the student enumerating the accommodations agreed upon and the responsibilities of the student. A copy of this letter will be signed by the student and returned to the 504 coordinator.

7. Instructors of courses in which the student is enrolled will be notified of the agreed upon accommodations and the implementation of these accommodations.

Appendix D

Diagram of the Process for Accommodating Learning Disabled Students


EXTERNAL ENVIRONMENT
INTERNAL ENVIRONMENT
PROCESS
ADMISSION
IDENTIFICATION
EVALUATION
TESTING
DIAGNOSIS
RECOMMENDATIONS
ACCOMODATIONS
SECTION 504
FACULTY
STAFF
ADA OF 1990
STUDENT
SOCIAL TRENDS

A MULTI-YEAR ACTION PLAN TO IMPLEMENT A PROGRAM FOR LEARNING DISABLED STUDENTS AT ALDERSON-BROADDUS COLLEGE

Human Resources Development

Derek Crews
Alderson-Broaddus College

Toni L'Hommedieu
Western Pennsylvania Cluster

A seminar paper presented to Programs for Higher Education
in partial fulfillment of the requirements for the
degree of Doctor of Education

Nova Southeastern University
March, 1996

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CONTEXT

Setting

Alderson-Broaddus College is a private four-year liberal arts college founded in 1871 and located in Philippi, West Virginia. The College is affiliated with the West Virginia Baptist Convention and with the American Baptist Churches U.S.A. Enrollment is currently 850 students representing 30 states, and 8 foreign countries.

Problem and Vision

Increasing numbers of students with learning disabilities are pursuing higher education in the United States. Vogel and Adelman (1992) state that the number of college students with learning disabilities has more than doubled in the last decade (p. 430). Institutions of higher education are required to ensure equal access to education for individuals with disabilities according to Title III of the Americans with Disabilities Act (1990), commonly referred to as the ADA. Section 504 of the Rehabilitation Act (1973) requires postsecondary institutions receiving federal financial assistance (including student loan programs) to make modifications to discriminatory academic requirements, and to make accommodations for "otherwise qualified handicapped students." Heyward (1992) notes that the standard of reasonable accommodation is not an objective compliance standard, and causes confusion among faculty and staff regarding their responsibilities.

In the second seminar paper I discussed these problems in detail, and developed a model to facilitate understanding of the problem (see Appendix A, p. 15). I also presented a vision of a solution which involves creating a comprehensive learning disability program that will facilitate the process described in the model. The program must comply with the stipulations of federal law, and should utilize an individualized approach. This third seminar paper presents a multi-year action plan to implement this vision. The plan includes three goals and five objectives. I will briefly discuss the methodology for each goal and objective, along with mentioning evaluation and budget concerns for each. All of the goals and objectives, with corresponding evaluation techniques and budget estimates are summarized in Appendix B.

METHODOLOGY

Goal One

Brinckerhoff and McGuire (Ryan and McCarthy, 1994), discuss the importance of policy statements, guidelines, and formal programs to ensure equal access to education by learning disabled students (p. 70). They state that these are crucial in implementing an institution's commitment to nondiscriminatory treatment of students with learning disabilities. This provides the rationale for goal number one: Develop a program to ensure equal access to education by learning disabled students. Two objectives are necessary in order to implement goal number one.

Objective 1.1

According to D. Stull, Vice-President of Student Services (personal communication, January 23, 1996), Alderson-Broaddus College needs a comprehensive policy that will outline the rights and responsibilities of the College, applicants, and students, regarding equal access to education under the ADA and Section 504. Objective 1.1 is: Develop a program to ensure equal access to education by learning disabled students. During year one, sample policies will be collected from other colleges, a literature review will be conducted, and a committee will develop an initial draft of the policy. In the second year, the policy will be reviewed by a higher education attorney, revisions made, and approval obtained by the faculty-staff. The policy will be be implemented at the end of year two. Year three plans include a review of the effectiveness of the policy. Faculty, staff, and learning disabled students will be interviewed regarding possible problem areas and suggested revisions to the policy.

Evaluation will occur through the input from faculty, staff, and legal counsel. Information will be gathered through the literature review and policies of other institutions will be examined in order to determine what is working in other programs. The budget for objective 1.1 is $550 as outlined in Appendix B. The largest expenditure for this objective is legal fees.

Objective 1.2

Scott (1994) reports that individuals with primary responsibility for educational programming for learning disabled college students often lack the experience and training necessary to implement support services (p. 403). She states that there are no specific procedures for federal compliance, and that institutional representatives have little guidance in offering services that do not discriminate against learning disabled students. Georgann duChossois, coordinator of New York University's program for learning disabled students, believes that many small colleges rely on one faculty member or general administrator to handle decisions and programs for the learning disabled (Shea, 1994, p. A55). duChossois believes that these faculty members and administrators are overwhelmed with the task and lack of guidelines and resource networks. This forms the basis for objective 1.2: Develop a network of resources for use in providing accommodations to learning disabled students.

During year one, a questionnaire will be distributed to all faculty, staff, and students, to identify individuals with the ability and desire to provide services such as interpretation for the deaf, note-taking, and tutoring. Information will also be solicited from institutions of higher education in close geographic proximity to Alderson-Broaddus in order to identify the potential for sharing of resources. The final stage during year one will involve compiling a list of providers of services that are not available on campus, or through area colleges. A resource network database will be developed during year two, which will include both on-campus and off-campus resources. The database can be designed and maintained by students in Database Information Systems courses offered by the Department of Business. The resource network will be implemented in year three. Administrators, faculty, and learning disabled students will have access to the database. The resource network will offer guidance to administrators and learning disabled students in determining the appropriate accommodations, and will also give assistance in deciding which are the most feasible alternatives based upon availability and cost. Evaluation will be based upon improvements in the delivery of accommodations to learning disabled students. The students will receive benefits since decisions will be based upon effectiveness, and the College will receive benefits since decisions will also include cost factors. The budget for objective 1.2 is $350, as outlined in Appendix B.

Goal Two

Brinckerhoff, Shaw, and McGuire (1992) relate the account of a civil suit in 1989, involving a University of California-Berkeley mathematics professor because he refused to provide a student with dyslexia with additional time on an examination (Brinckerhoff, Shaw, and McGuire, 1992, p. 423). The professor rejected the request on the grounds that "there was no such thing as a learning disability," and maintained that the student was using the disability as a ruse for securing additional time on the examination. Brinckerhoff, Shaw, and McGuire state that many faculty members believe they are in a position to dictate what they will and will not provide to students with disabilities. Zirkel (1994) reports a civil case in which a high school instructor was fined $30,000 in punitive damages for denying testing accommodations for a learning disabled student. These cases indicate the need for goal number two: Provide an environment in which faculty and staff are knowledgeable about the needs of learning disabled students, and possess the competency and skills to implement alternative instructional strategies utilizing various accommodations.

Objective 2.1

Objective 2.1 is: Increase faculty/staff knowledge regarding types of learning disabilities and instructional strategies that enhance the probability of academic success for students with learning disabilities. The strategy for implementing this objective centers around developing a professional development seminar and a self-study course. The seminar and the self-study course will be developed during year one, implemented in year two, and evaluated/revised during year three. The professional development seminar will be a one-half day event held during the annual faculty/staff workshop in August. This seminar will be presented by an individual with training and expertise in providing equal access to higher education by students with learning disabilities. All faculty and staff will be required to complete the self-study course sometime during the academic year. The course will include training regarding specific types of learning disabilities, alternative instructional strategies, various accommodations, and the requirements of the ADA and Section 504 of the Rehabilitation Act. The use of expert resources in the development of both the seminar and the self-study course will assist in the evaluation process. Faculty and staff will have a better understanding of learning disabled students, and will gain the competencies needed to effectively teach these students, and ensure the college's compliance with federal law. As a result, learning disabled students will have a greater chance to succeed academically. The budget for objective 2.1 is $3,800, as outlined in Appendix B. A significant portion of this is the fee for the seminar speaker, and for the purchase of videos for the self-study course.

Objective 2.2

The Heath Resource Center (1993) indicates that many students with learning disabilities have become frustrated by repeated academic failure which then leads to low self-esteem (p. 2). Heath reports that learning disabled students expend much of their energy trying to cope with these stresses; energy which could be better spent searching for and using effective learning styles. Feelings of anxiety, inadequacy, and frustrations are common among learning disabled students. These concerns are addressed in objective 2.2: Implement a support network for students with learning disabilities and provide opportunities for increased awareness of the needs of learning disabled students by education students.

The methodology includes a literature review during year one. Information regarding existing programs that have proven to effective will be solicited from the Office of Disabled Student Services at other campuses. A support network will be developed during year two. This will be administered through the existing Learning Resource Center, and will utilize education majors and other interested students. The benefit of this is that education students will be exposed to the needs of learning disabled students, and will be better prepared to work with this type of student in their own classroom in the future. The support network will be implemented in year three. Education majors could be utilized in providing academic assistance such as helping to study for tests. The network will be a resource and information service that will offer learning disabled students guidance, academic assistance, counseling, and emotional support. The Heath Resource Center (1993) states that individuals with learning disabilities are relieved to find that there are ways to deal with their frustrations (p. 2).

Evaluation of this objective will involve several questions: "Are students with learning disabilities learning more about strategies for academic success?", "Is emotional support being provided?", and "Is there increased awareness of learning disabled students' needs by education students?"

The budget for this objective is very small (only $50). The only expense (other than faculty and staff time) is for long distance phone charges to other campuses and reprints for the literature review.

Goal Three

The Heath Resource Center reports that many individuals with learning disabilities are unsure of where to go for help and information (National resources for Adults with Learning Disabilities, 1994). Some individuals may suspect that they have a disability, but have not had it specifically identified through testing. Others know what learning disability they have, but are not familiar with their rights regarding higher education, available services, or may not know how to get more information. These issues are addressed in goal three: Insure awareness by learning disabled students of their rights and responsibilities regarding equal access to higher education.

Objective 3.1

There is only one objective necessary to implement goal three. Objective 3.1 is: Develop communication channels to inform learning disabled students of their rights and responsibilities regarding equal access to higher education.

The methodology for this objective includes two steps. First, the college will notify all admitted students of the appropriate communication channel for self-identification by learning disabled students. Second, a complete information packet will be mailed to learning disabled students after self-identification. During year one, the policy draft committee (formed for objective 1.1) will develop communication channels for self-identification by learning disabled students. They will also contact Offices of Disabled Students at other campuses to obtain sample student information packets that have been developed. During year two, the college will implement a mailing to all admitted students to inform them of the communication channels for self-identification. A learning disabled student information packet will be developed in this year, and beginning in year three, will be mailed to all learning disabled students after admission and self-identification. This packet will inform the learning disabled student of campus policies, available services, and provide information about the support network developed in objective 2.2.

Evaluation will concern whether learning disabled students are fully informed of their rights and responsibilities regarding equal access to higher education, under ADA and Section 504. The budget for this final objective is $485. Part of this expense ($460) will be a recurring annual expense for the printing and mailing of the letters and information packets.

BUDGET

Many of the steps required to implement these goals and objectives will require considerable faculty and staff time. This will not result in any additional expenditures to the college, but will require priority setting by the personnel involved. New budget expenditures include long-distance charges, photocopy expenses, software purchases, video purchases, a seminar speaker's fee, and legal expenses. The total of new budget expenditures is $5,235, for the entire three years. The budget expenditures are included in Appendix B.

CONCLUSION

In the second seminar paper, I described the need for a comprehensive program for learning disabled students at Alderson-Broaddus College. I stated that the program must foster communication among faculty, staff, and learning disabled students. I further explained that any such program must comply with the mandates of federal law, and should utilize an individualized approach. This multi-year action plan will implement the vision set forth in the second seminar paper, and provide the necessary policies and programs to ensure compliance with federal law. It will also enhance communications and awareness among faculty, staff, and students regarding equal access to higher education by students with learning disabilities.

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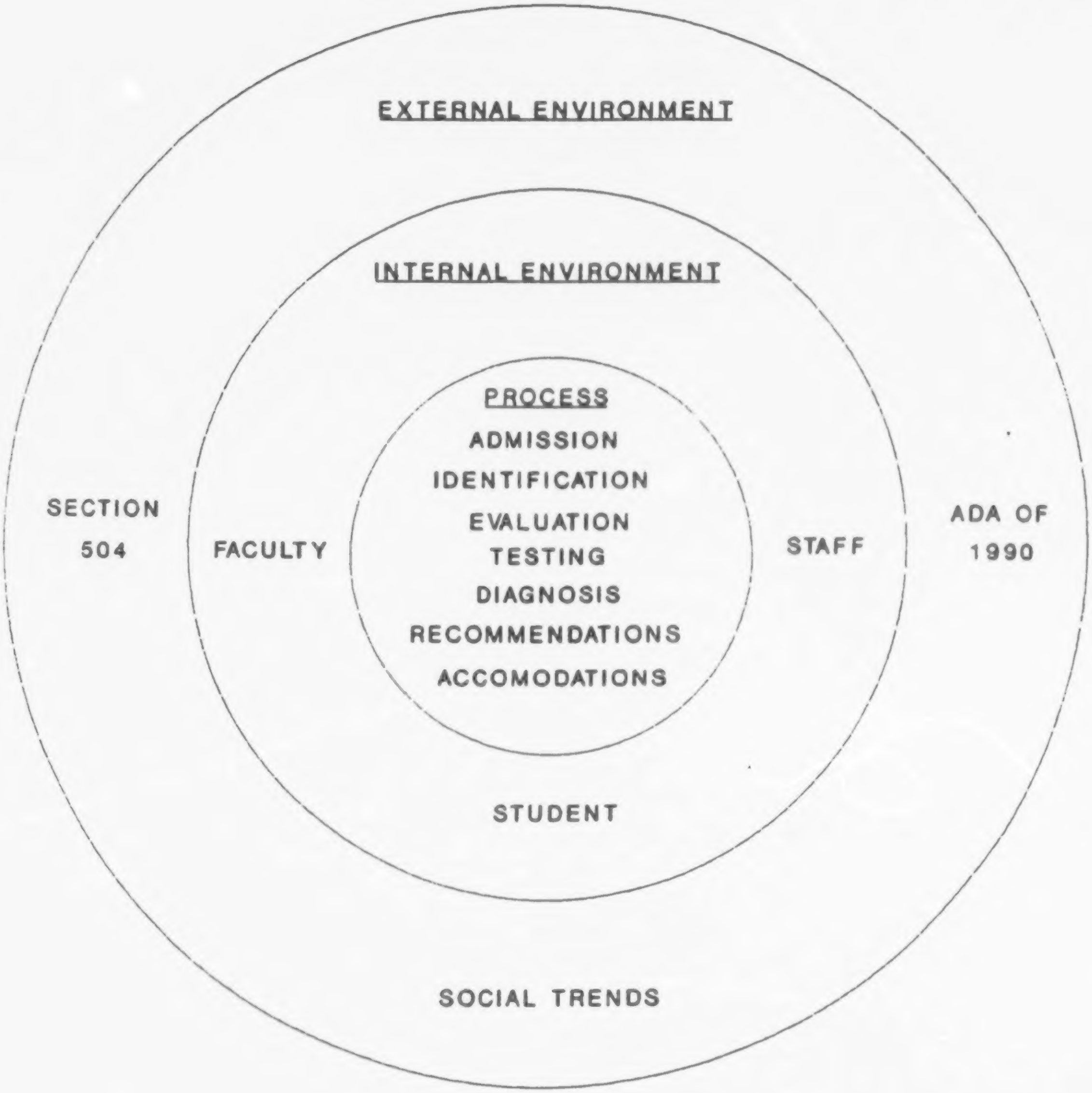
APPENDIXES

Appendix A

Diagram of the Process for Accommodating Learning Disabled Students


EXTERNAL ENVIRONMENT
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ACCOMODATIONS
SECTION 504
FACULTY
STAFF
ADA OF 1990
STUDENT
SOCIAL TRENDS

Appendix B

Multi-year Action Plan for a Learning Disabled Program at Alderson-Broaddus College

GOAL 1: Develop a program to ensure equal access to education by learning disabled students.

Objective 1.1: Develop a formal policy for admission, identification, and granting of accommodations for learning disabled students.

Year 1	Year 2	Year 3
Methodology: 1. Collect sample policies from similar institutions. 2. Conduct a literature review. 3. Form a committee to develop a draft of the policy. Members will include Vice-President of Student Services, faculty in Special Education, and Director of the Learning Resource center. Evaluation: 1. Information gathered from sample policies. 2. Literature review completed. 3. Draft will be developed. Budget: 1.Long distance phone charges $25. 2. Photocopies for literature review $25.	Methodology: 1. Attain faculty/ staff approval of policy (revisions to policy as recommended). 2. Review by attorney with specialization in higher education law (revisions to policy as recommended). 3. Implementation of policy. Evaluation: 1. Final draft will be developed with input of faculty/ staff. 2. Compliance with ADA and Section 504 will be insured through legal counsel. Budget: 1. Legal Fees $500.	Methodology: 1. Review effectiveness of policy. 2. Interview learning disabled students, faculty, and staff for possible problem areas and revisions. Evaluation: 1. Learning disabled students will have equal access to education. 2. Final policy will be revised and clarified if necessary based on student, faculty, and staff feedback. Budget: None

Objective 1.2: Develop a network of resources for use in providing accommodations to learning disabled students.

Year 1	Year 2	Year 3
Methodology: 1. Distribute questionnaire to all faculty, staff, and students to identify individuals with ability and desire to provide services such as interpretation for the deaf, note-taking, and tutoring. 2. Solicit information from area higher education institutions regarding resources already available. 3. Compile a list of providers of services not available on campus, or through area colleges (such as books on tape). Evaluation: 1. Available resources will be identified. 2. Possibility of sharing of resources with other area higher education institutions. Budget: 1. Long distance phone charges $25. 2. Photocopies for questionnaire $25.	Methodology: 1. Develop resource network database including on-campus and off-campus resources. Evaluation: 1. Availability of resources can be quickly determined along with the cost of providing the accommodation. Budget: 1. Purchase database software license $300.	Methodology: 1. Implement resource network assigning accommodations to learning disabled students based on recommendations of qualified professional, after testing and diagnosis of student. 2. Implement bi-annual update of on-campus and off-campus resources. Evaluation: 1. Decisions regarding accommodation cost can be made based on effectiveness and cost. 2. Accommodations will be provided based on student need. Budget: 1. None.

GOAL 2: Provide an environment in which faculty and staff are knowledgeable about the needs of learning disabled students, and possess the competency and skills to implement alternative instructional strategies utilizing various accommodations.

Objective 2.1: Increase faculty/staff knowledge regarding types of learning disabilities and instructional strategies that enhance the probability of academic success for students with learning disabilities.

Year1	Year 2	Year 3
Methodology: 1. Develop a professional development seminar for faculty/staff on compliance with federal law, needs of learning disabled students, and alternative instructional strategies. 2. Develop a self-study course for faculty/staff regarding specific types of learning disabilities. Evaluation: 1. College will comply with demands of federal legislation. 2. Expert resources will be utilized by obtaining a speaker for the seminar, and books and videotapes for the self-study course. Budget: 1. Seminar speaker $750. 2. Videos and other self-study materials $2,500.	Methodology: 1. Deliver professional development seminar during annual faculty/staff workshop. 2. Implement use of self-study courses to supplement professional development seminar. Evaluation: 1. Faculty/staff will have increased awareness of needs of learning disabled students. 2. Faculty will have a better understanding of specific learning disabilities and appropriate instructional strategies and accommodations. Budget: 1. Photocopies of workshop materials $500.	Methodology: 1. Utilize questionnaire to faculty/staff and students to evaluate success of training programs and identify areas of additional training needs. Evaluation: 1. Learning disabled students will have greater chance to succeed in higher education. 2. Faculty/staff will have less fear of working with learning disabled students. Budget: 1. Photocopies of questionnaires $50.

Objective 2.2: Implement a support network for students with learning disabilities and provide opportunities for increased awareness of learning disabilities by education students.		
Year 1	Year 2	Year 3
Methodology: 1. Conduct a literature review. 2. Solicit information from the Office of Disabled Students of other higher education institutions.	Methodology: 1. Develop a support network for learning disabled students administered through the Learning Resource Center.	Methodology: 1. Implement support network. 2. Utilize education majors and other interested students in the support network.
Evaluation: 1. Literature review will be completed. 2. Pilot programs of other higher education institutions will be evaluated.	Evaluation: 1. Students will learn more about strategies for academic success. 2. Emotional support will be provided for learning disabled students.	Evaluation: 1. Opportunity for academic success by learning disabled students will be increased. 2. Increased awareness of learning disabled students needs by education students.
Budget: 1. Long distance phone charges $25 2. Photocopies for literature review $25.	Budget: None	Budget: None

GOAL 3: Insure awareness by learning disabled students of their rights and responsibilities regarding equal access to higher education.		
Objective 3.1: Develop communication channels to inform learning disabled students of their rights and responsibilities regarding equal access to higher education.		
Year 1	Year 2	Year 3
Methodology: 1. Policy draft committee will develop communication channels for self-identification by learning disabled students. 2. Solicit sample student information packets from other campuses.	Methodology: 1. Implement communication program through mailing to all admitted students. 2. Develop learning disabled student information packet.	Methodology: 1. Mail learning disabled student information packets to all admitted students after self-identification.
Evaluation: 1. Data from other college programs will be evaluated.	Evaluation: 1. Learning disabled students will be aware of communication channels for self-identification.	Evaluation: 1. Learning disabled students will be fully informed of their rights and responsibilities under ADA and Section 504.
Budget: 1. Long distance phone charges $25.	Budget: 1. Printing and mailing of student information letters $310 (recurring annual cost).	Budget: 1. Printing and mailing of learning disabled student information packets $150 (recurring annual cost).

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March 12, 1996

Dr. Warren H. Groff
1531 Peabody Avenue
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Dear Dr. Groff:

This is to authorize the use of my three seminar papers for the Human Resources Development seminar (Western Pennsylvania Cluster, winter term, 1996) in a report on the seminar.

Sincerely,

Derek Crews

STRATEGIC PLAN FOR THE DEVELOPMENT OF THE GRADUATE NURSE WITH CRITICAL THINKING SKILLS

Amy P. Leehan
Edinboro University of Pennsylvania

Dr. Warren Groff
Western Pennsylvania Cluster

A seminar paper presented to Programs for Higher Education
in partial fulfillment of the requirements for the
degree of Doctor of Education

Nova Southeastern University
March, 1996

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INTRODUCTION

Edinboro University of Pennsylvania department of nursing is in need of criteria by which the faculty can follow to enhance the critical thinking skills of the student nurse, as well as those which indicate the critical thinking ability of the graduate nurse. Critical thinking is an issue which must be clearly identified within the curriculum as required by the National League of Nursing (NLN). In order to maintain NLN accreditation, the faculty must identify this integration as well as criteria by which it is enhanced and measured. Critical thinking is also a skill which will be necessary to the survival of the nurse within future community based health care delivery systems. Attempts to accomplish this in the past have been fragmented. The faculty needs a plan or strategy which they can follow, indicating the vision towards which they are working, along with the goals and objectives, internal and external sources, cost, and time frame within which they hope to achieve certain goals.

The vision of the State System of Higher Education is that of community in which total collaboration exists among all who work in the system towards meeting the educational needs of a diverse population of students. According to Collins and Porras, three main factors should be addressed when discussing vision: (a) organizational beliefs and principles; (b) organizational purpose growing out of these beliefs; and (c) a mission consistant with organizational purpose which includes enhancement of organizational growth towards that purpose (1989). The vision that this author offers for this particular project is that of the graduate nurse with high level critical thinking skills. This is consistant with the University's vision as it utilizes collaborative efforts, and employs multicultural strategies for it's realization. The University beliefs and principles are being addressed as student diversity is a focus through the individualized assessment necessary within this plan.

The initial step of this plan would be an assessment of the faculty which would indicate the strengths or experts within the department who could assist in the planning process itself. Any faculty person, strong in leadership skills and HRD strategies could be identified for group direction. This step would also help to delineate which educational needs the department has which could be addressed by faculty from other departments, such as the computer center and the education department.

After leadership has been established, and the strengths and weaknesses have been identified, an initial plan could be drawn up. According to Anderson, a key factor in change efforts which were instrumental in the transformation of companies from standard to superior, were due to the existence of a "championing leader" (1985). Bennis and Nanus identified four themes in the actions of effective leaders which are: (a) attention of their followers through a vision, agenda, or focus, (b) communications which gave shared meanings to events and actions, (c) engendered trust through reliability and sticking to goals, and (d) inspiration of others through positive self regard and optimism (1985). The leader must also be open to the suggestions of an external HRD specialist. Because there is no known HRD specialist on the University staff, an outside consultant would then be advised of the vision, and goals and objectives, for refinement of this plan. This would cost the department approximately $500.00 plus expenses of travel and hotel for a one day consultation.

The preliminary proposed plan will be one which has been generated to work from as a baseline. The content of the plan is based on the outcomes for graduate nurses with critical thinking skills as presented in Appendix A. The process of the progression is presented in Appendix B. One of the major assumptions of this plan is that all students will be evaluated according to these outcomes on and individual basis, since our student population is so dramatically diverse in entry level, and culture. Another assumption is that this department is at a readiness level conducive to the acceptance of this change in light of the culminating external requirements to integrate the critical thinking process and outcomes into our curriculum and evaluation procedures.

THE PRELIMINARY PLAN

Phase I

Faculty strengths and needs will be identified and addressed. This goal could be accomplished in several steps. First, by introducing the concept of integration of critical thinking process and outcome into the curriculum and program evaluation procedures. According to Silber, change typically produces much anxiety, the purpose of this addition to our program must be clearly identified, along with the reasons why this change is necessary. This should help to eliminate some of the resistance which may be encountered at this time (1993)

The second step in this phase is the gathering of information from the faculty which will indicate strengths and needs within the department. This will yield data which will help to identify those with expertise in the areas of critical thinking, as well as HRD. According to Elden, the individuals to be affected by organizational change are able to foresee more variables and complex relationships than those higher in the organization (1983). This step would also reflect faculty readiness to commit to this effort. Once this information has been gathered, the educational needs of the faculty can be outlined within the plan.

Once a plan has been drafted, the third step can be executed, and an external HRD expert will be consulted. The role of the consultant is to provide managers with data, skills, suggestions, change motivation and vision clarification. McLean et al have identified two types of consultants: the (a) centered consultant which is one who thrives on opportunity within the long-range view, tolerates ambiguity and organizational messiness, and rewards small accomplishments, and (b), the unintegrated consultant, who takes more control of situational events, and applies theory as a blueprint for success (1982). This author feels that this department would benefit from a consultant who is able to identify political aspects of the situation without allowing them to undermine the efforts to change (Margulies & Raia, 1984; Brown, 1982). A consultant with a solid theoretical background, but one who is also centered and politically astute, would be most helpful in this endeavor.

The fourth step of phase I is the collaboration with faculty from other disciplines on campus, who can provide the faculty with educational needs. These may be drawn from such departments as education, psychology, and the computer center. Those from the education and psychology departments can offer in services as to classroom strategies with which to promote critical thinking, and further information regarding the critical thinking process itself. The computer center can assist the faculty to become more comfortable with the technological advances in health care services, providing ongoing programs, and on call assistance with the various systems available. The faculty need to acquire an understanding of the capabilities of different types of computers for classroom presentation, testing, and use in the clinical field.

Phase II

The faculty will identify the tools and the use of those tools. The first step in this phase is to identify the tools necessary to obtain necessary data revealing the level of critical thinking skills upon entry into the nursing courses, as well as upon graduation. This author suggests the Watson-Glaser Critical Thinking Appraisal (WGCTA). According to Norris and Ennis, this is one of the oldest and most extensively used test for the evaluation of critical thinking skills. The primary audience for this test has been those of high school and college age. It is composed of 80 multiple choice questions divided into 5 subtests which assess (a) inference, (b) recognition of assumptions, (c) deduction, (d) interpretation, and (e) evaluation of arguments. The WGCTA has reliability estimates ranging from .70 to .82, which are consistent with other critical thinking tests. Validity has been demonstrated through studies which have indicated increases in test performance after instruction in critical thinking (1989).

The second part of this phase is the introduction of the levels of intellectual functioning as identified by Belenky (1986), and Perry (1970). These include: Level I-Dualism/received knowledge, Level II-Multiplicity/subjective knowledge, Level III-Relativism/procedural knowledge, and Level IV-Commitment in relativism/constructed knowledge. High scores on the WGCTA have been associated with the fourth level of intellectual functioning. The faculty educational component of these levels would be offered by this author.

The third step of this phase involves the incorporation of opportunities for faculty to gain some skills in the use of these tools, as well as critical thinking enhancement strategies. This would be accomplished be scheduling in services from supporting experts. These might include sessions on providing critical thinking opportunities for students within the classroom, or activities for students to perform independently. Faculty from the education and/or psychology department may be utilized in these efforts. Technology also plays such an enormous role in health care services. Faculty will need to possess a workable and growth oriented knowledge base of the use of computers in health care. The computer department has many faculty who are very knowledgeable as to the different types of computers, their capabilities, and how to access those capabilities. The computer center has a number of different types of computers for hands on practice. Faculty in services will also be necessary to address this area of major continuing growth.

The fourth step in this phase is the meaning of the use of the WGCTA and the levels of intellectual functioning. Administration of the WGCTA upon entry into the nursing program, and then again at graduation would provide data which would indicate if critical thinking growth has occurred. This alone does not indicate that action is being taken by faculty to promote critical thinking. Therefore, criteria as extrapolated from the levels of intellectual functioning have been outlined as guidelines which the faculty can follow. These criteria can be utilized by the faculty to assess individual student levels as they progress throughout the program. If the faculty identifies that a student is not progressing through these stages, more critical thinking learning activities can be added. The educational department can serve as a reference source to assist faculty with innovative ways to offer students these activities if necessary.

Phase III

Implementation of the plan. Administration of the WGCTA to entry and graduating students would be the first part of this phase. This department has already been testing students in this way which will be an advantage for the faculty when summarizing data, as there will be scores from students without intellectual functioning evaluation to compare with future data of students receiving that component.

The second part of this phase is the implementation of evaluation of intellectual functioning levels. Each nursing course has a a component in which the student does a self evaluation and the faculty evaluates the student progress. There are already specific forms which are used for this purpose. The criteria which are to be utilized for intellectual functioning can be added to the faculty forms for end of course student evaluation. A narrative area would also be provided in which the faculty could indicate specific information to back up her assessment (see Appendix D). This information would then be forwarded to the student folder for review by the student's next teacher. This ongoing individual assessment will provide each student with greater consistency, and constant identification of the progression of each student.

The third part of this phase is the feedback loop in which faculty can indicate the need for further assistance with activities for critical thinking enhancement. These may be in the way of educational strategies, computer use, etc. At this point, hopefully a collaborative atmosphere with other departments has been established. this would then allow informational exchange between departments which would enhance student and faculty growth. Critical thinking is not a concept solely linked to the nursing profession, therefore other disciplines would benefit from the integration of critical thinking assessment in their curriculums. This exchange of expertise between departments would then be consistent with the State System of Higher Education's vision of 'community'.

The fourth factor requiring consideration is the integration of this plan into the current curriculum threads (see Appendix C). The four levels of intellectual functioning can be conveniently plugged into the four levels of the college student. However, students do not start in the nursing courses until their sophomore year, the point at which they should be in the second intellectual level. This may present a 'catch-up' dilemma as students may enter that second year in the first level (which this author feels is quite common, although some levels may be mastered more quickly than others).

Phase IV

Outcomes and summative information. In this phase, data from the testing along with integration of intellectual functioning levels will be examined. The first step would be to collect and summarize WGCTA results from each student. At this point in time, there should be longitudinal data which would indicate critical thinking levels upon entry and graduation for each student.

In the second part of this phase, the entry scores would be compared with intellectual functioning level evaluations from initial nursing courses to investigate their correlation to critical thinking scores. This would also be performed on graduating student scores and intellectual levels.

At this point we may have a lot of numbers to work with, which would lead us into the third part of this phase which consists of summarizing. A brief statement of individual student progression through the program in conjunction with WGCTA scores would be included in the student folder. This statement should include any exceptional progression (as one may see with the non-traditional student), or instances where remedial critical thinking activity was necessary. Even regression may occur in some circumstances, and this too must be indicated as WGCTA scores will probably reflect the same. At least now, there will be some documentation as to why this may have occurred. As the data is compiled and analyzed, there may be some evidence of the necessity to change the methodology employed in this situation. This leads us into the next phase.

Phase V

The plan will be reviewed and revised as necessary. After the summative information has been compiled, the faculty needs to review the effectiveness of the plan, and the validity of the methodology. Some questions may be considered at this time, such as; (a) have the evaluations as per the criteria, been matching up to the WGCTA results? (b) If they have not matched, why? (c) do the criteria need to be more specific? (d) have cultural differences been accounted for during the intellectual level evaluation process? This last question raises yet another assumption, that faculty are differentiating cultural differences from intellect. In other words, a male student from Africa may not do well in obstetrics, but not because he is a poor student, but because in his country, men are not involved in the birthing process. Students from other cultures will require more scrutiny in the evaluation process than the traditional student due to their difference in perception of situations.

Any plan requires some alteration as part of the growth process. This could be just streamlining the current plan, updating the plan according to more recent research, or implementation of the plan using advanced technological strategies. In fact, these are factors that should be constantly considered throughout implementation.

Another point to consider at this time are roadblocks. Were there any parts of the plan which were difficult to accomplish? Reasons for these must be considered. Roadblocks may be due to inadequate education, lack of expertise in certain areas, or simple lack of motivation. Any change requires commitment on the part of the individuals upon which the change has most impact. If commitment is weak, the need for the change may not be realized by those involved in the plan.

What external opportunities are being addressed by the results of this plan? This question will help the faculty to determine the usefulness of critical thinking in the nursing curriculum. The role of health care provision is constantly changing as health care reform takes shape. The impact of continuous change needs to be considered.

SUMMARY

The political arena is currently holding the fate of future health care delivery. Indicators point to a more community based system in which our graduate nurses will be faced with the task of critical decision making. In order to enhance and evaluate their readiness for this type of atmosphere, criteria for critical thinking assessment must be established for utilization throughout each student's progression through Edinboro University's nursing curriculum. Testing needs to be performed on program entry, and again upon graduation for evaluation of critical thinking enhancement efforts. This plan has been offered as a baseline strategy. As with any plan, it is open to alterations as deemed necessary by those upon which it impacts. Collaborative efforts will be crucial to progress towards the vision of the critically thinking graduate nurse. Student exposure to the technological advances both in classroom and in the field will greatly enhance their abilities after graduation. Open communication with an external HRD consultant as well as with other campus departments are necessary for the plan's success. The State System of Higher Education's vision of 'community' will be taking some shape.

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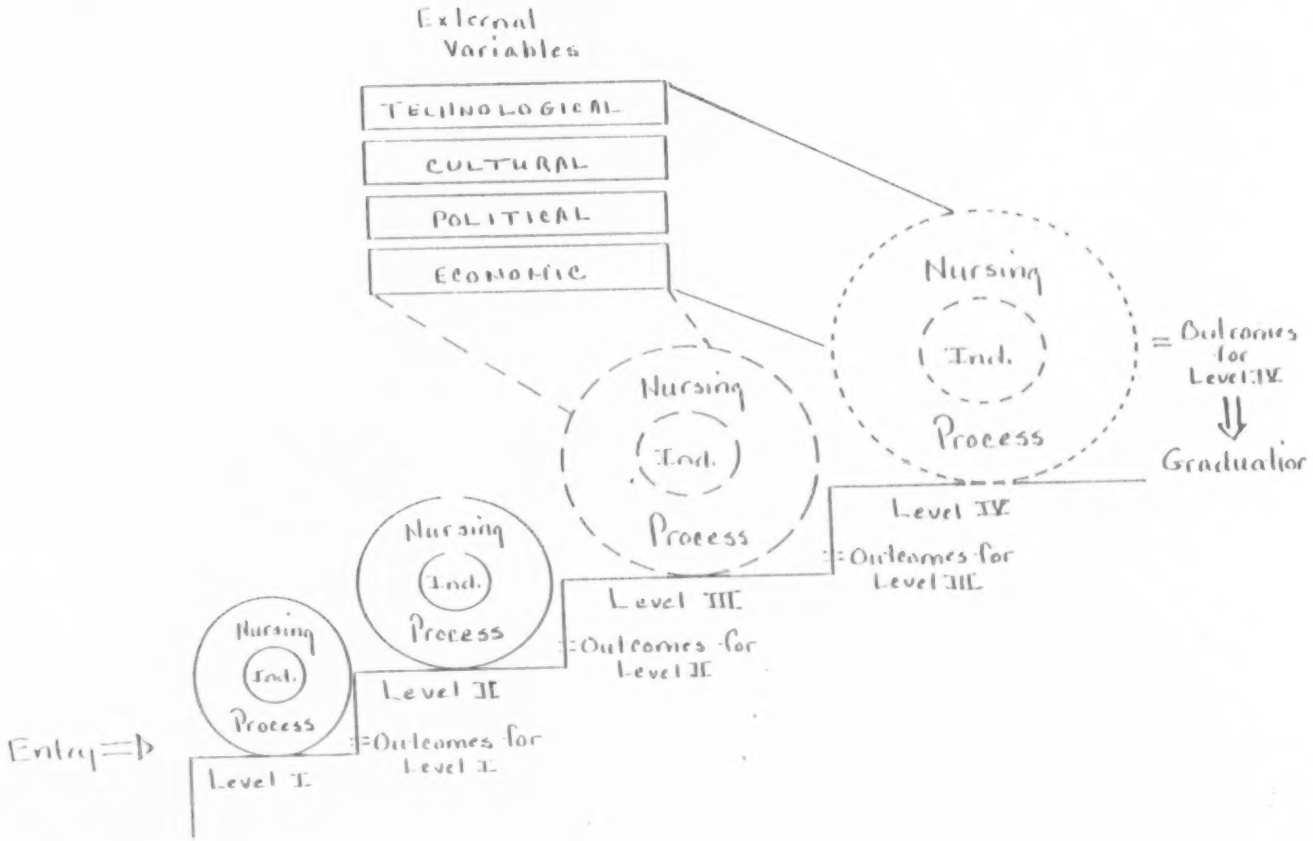
APPENDIXES

Appendix A

Characteristic outcomes of the Nursing Process within the four levels of intellectual functioning.

Dualism/ Received knowledge	Assessment	absence or presence of symptom
	Nursing Diagnosis	focus on medical diagnosis
	Goal Setting	single goal
	Nursing Intervention	right or wrong procedures
	Evaluation	did or didn't meet goals
Multiplicity/ Subjective knowledge	Assessment	express feelings about symptom
	Nursing Diagnosis	doubt specific diagnosis
	Goal Setting	unclear multiple goals
	Nursing Intervention	impose own needs
	Evaluation	has reached own goals not necessarily patients
Relativism/ Procedural knowledge	Assessment	mixture of student feelings and actual data
	Nursing Diagnosis	notice that different diagnoses apply
	Goal Setting	multiple clearer goals
	Nursing Intervention	specific to meet patient goals
	Evaluation	some met and some not met
Commitment in relativism/ Constructed knowledge	Assessment	Gather data subjectively and objectively
	Nursing diagnosis	Self assured in mixture of knowledge and intuition
	Goal Setting	Short and long term goals comfortably identified
	Nursing Intervention	Backed up by facts and apply directly to goal attainment
	Evaluation	Identification of alternatives

Appendix B


External Variables
TECHNOLOGICAL
CULTURAL
POLITICAL
ECONOMIC
Nursing
Ind.
Process
= Outcomes for Level IV
⇓
Graduation
Nursing
Ind.
Process
Level IV
= Outcomes for Level III
Nursing
Ind.
Process
Level III
= Outcomes for Level II
Nursing
Ind.
Process
Level II
= Outcomes for Level I
Entry ⟹
Level I

Appendix C

CURRICULUM THREADS

The elements which unify the curriculum are identified as vertical and horizontal threads. The threads are derived from the characteristics of the graduate and the conceptual framework. The vertical threads permit the student to gain both depth and breadth with progress in the nursing program. As the complexity of nursing interventions increases, new principles and theories are provided. The vertical threads are focus of care, nurse's role, goal of care, decision making, and personal and professional growth. The horizontal threads provide the elements of the framework which are introduced in the first level of the program and gain in breadth as they are applied in various settings. Based on these definitions, nursing process, life span, internal and external environment, legal and ethical standards, and research are classified as horizontal threads.

DIAGRAM OF CURRICULUM THREADS

	FOCUS OF CARE	NURSE'S ROLE	GOAL OF CARE	DECISION MAKING	PERSONAL AND PROFESSIONAL GROWTH
Master's	Multi-Person Units	Case Manager	Health Actualization	Consumer	Adds to Nursing Knowledge
Senior	Individuals and families within the Community	Collaborator of Care	Health Promotion	Supportive/ Educative	Synthesizes Knowledge
Junior	Individuals and Families	Coordinator of Care	Health Restoration	Wholly Compensatory	Integrates Knowledge
Sophomore	Individuals	Contributor to Care	Health Awareness	Partly Compensatory	Seeks Knowledge

RESEARCH
LEGAL AND ETHICAL STANDARDS
ENVIRONMENT
LIFESPAN
NURSING PROCESS

Appendix D

Critical Thinking Evaluation Form

Directions: Read each category listed below and indicate where the student falls according to the criteria presented.

Student Name ______________________________ Year: Fr So Jr Sr NA

Nursing Program- (circle one) Baccalaureate
Innovative
Family Nurse Practitioner

____Level I. Dualism/Recieved knowledge

Express fear to contribute in class discussion due to their lack of facts. Textbooks and professors are the sources for factual information- if it is presented in class or is in the text, it is 'right', or 'the only answer'. Information is either 'correct' or 'not correct'.

____Level II. Multiplicity/Subjective knowledge

Part of knowledge attainment carries conflicting doctrines or opinions. Begin to trust in their inner voices. Student may state "I had a feeling about that" or "Something just didn't feel right about that", and acknowledges existence of doubt and uncertaintanties. May encounter arguments over grading where specific criteria are not identified, such as in essays, or papers. Students at this level may realize the complexities of life, but do not know how to navigate it's waters. Student may base argumentation on ther own belief system or opinions.

____Level III.. Relativism/Procedural knowledge

Students realize that there is there is a 'quality' level when offereing opions, such as may be required on an essay, class discussion, or conversation with peers. Support opinions with substantial reasons, weighing more than one factor when forming opinions. Utilize more objective data. Use more disciplinary methods of reasoning. Careplans will begin to fall into place much easier. Argumentation is based on objective analysis. Student will also be able to express reasons for another's way of thinking.

____Level IV. Commitment in relativism/Constructed knowledge

Student expresses commitment to a position. Constructed knowers take a "position outside a particular frame of reference and look back on 'who' is asking the question, 'why' the question is asked at all, and 'how' answers are arrived at"(Belenky et al. 1986, p. 139). Become quite engaged in the search for understanding.

Please indicate below, within a couple sentences, why you feel this student is at the level as indicated above.

____

____

____

____

Dr. Warren Groff
1531 Peabody Ave.
Memphis, TN 38104

Amy P. Leehan
3580 Kinter Hill Rd.
Edinboro. Pa. 16412

Dear Dr. Groff,

I am writing in response to your request to utilize my strategic plan from HRD. I would be glad to authorize reproduction of my work within your HRD report. I learned much from this project and would be delighted to share it with others. I enjoyed HRD, and working with you. Thank you for your constructive assessment, encouragement, and support. I hope to see you in July at the Summer Institute.

Sincerely,
Amy Leehan
Amy P. Leehan

MULTI-YEAR PROGRAM EVALUATION ACTION PLAN FOR MOUNT VERNON NAZARENE COLLEGE'S TEACHER EDUCATION PROGRAM

Human Resources Development

Bevin Shiverdecker
Mount Vernon Nazarene College

Toni L'Hommedieu
Western Pennsylvania Cluster

A seminar paper presented to Program for Higher
Education in partial fulfillment of the
requirements for the degree of
Doctor of Education

Nova Southeastern University
March, 1996

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RATIONALE

Mount Vernon Nazarene College (MVNC), a coeducational college of the arts and sciences, is located in Knox County, a small rural county in Central Ohio. The pioneer class arrived on campus in the fall of 1968. The first baccalaureate degree was awarded in May, 1976. It is the official college of the East Central Educational Region of the Church of the Nazarene including: (a) Ohio; (b) West Virginia; and (c) eastern Kentucky. Many of the students come from this church constituency. However, MVNC is not narrowly sectarian. Students of like ideals are welcome to the college community. MVNC currently has a student body of over 1,400.

The Division of Education and Physical Education is one of seven MVNC campus divisions. Education Department programs include elementary, secondary, and comprehensive education. In January of 1990, the Teacher Education Program created a new guide intended to better structure the evaluation of student teachers during a semester's midterm and final conferences attended by the student teacher, public school cooperating teacher. and the college supervisor. MVNC's public school cooperating teachers were not afforded the opportunity to participate in the development process of the new student teacher evaluation guide. The MVNC Teacher Education Program does not claim that this evaluation guide was meant to be either limiting or exhaustive. However, concerns and questions regarding the evaluation guide have been voiced by MVNC's cooperating teachers. Similar criticisms pertaining to the lack of communication and participation by public school personnel have been occasionally voiced.

Callan (1993, pp. 3-19) explains that higher education institutions must develop closer working relationships with elementary and secondary schools. He notes a common belief among state leaders is that higher education institutions must be more informed about the current school reform movements and must be more active in making changes necessary to support those school reforms.

Parnell (1990, pp. 3-29, 247-250) asserts that the United States is "currently in the tension of transition." He describes this transition as one to a technological-learning age. Douglas (1992, p. 42) states that the new learning age will necessitate the presence of citizens who are "well-educated, well-trained, self-empowered, and creative." Callan (1993, pp. 3-19) explains that higher education institutions must prepare graduates to excel in a world dominated by competition, rapid technological advances, and complex social, intellectual, and ethical issues. He notes that teacher education must assume a more responsible role in the preparation of graduates during this time of transition.

Moore (1995, pp. 3-18) stresses that solutions must be developed for the questions of how teacher education programs can be brought into better alignment with the real needs of both society and students or how educators could do a better job of helping students attain higher levels of both knowledge and skills. He states that effective teaching is sound decision making. Sound decision making requires a solid theoretical knowledge base and active knowledge (ability to apply theoretical knowledge). Attention to the development and refinement of essential teaching skills is important to all professional educators. Without these skills, teachers can never maximize their teaching effectiveness.

The implementation of a plan for the evaluation of MVNC's Teacher Education Program will enhance efforts to do a better job of helping future teachers attain meaningful levels of knowledge, skills, and attitudes with a relevant, thorough, and challenging training process. This plan will bolster the Teacher Education Program's reputation for quality instruction and graduates. Graduates will be better prepared to consistently exhibit teacher characteristics and instructional techniques cited by education experts and research as essential for effective teaching. A significant recruitment strength is the promise of a MVNC Teacher Education Program that develops well-educated teachers prepared to meet the needs of a new learning age.

GOALS AND OBJECTIVES

The purpose of this project is to develop a plan for the evaluation of the MVNC Teacher Education Program (see Appendix A, p. 19). The development problem-solving methodology will be utilized in this project. Following admission to MVNC's Teacher Education Program, students complete either elementary, secondary, or comprehensive education programs. A Teacher Education Advisory Committee will provide the Education Department with recommendations intended to enhance program strengths and improve weaknesses. Teacher Education Advisory Committee members will consist of area public school superintendents, principals, and teachers, MVNC Teacher Education Program graduates, and MVNC Education Department professors. This committee's participant diversity is supported by the contention of Watkins and Marsick (1993, pp. 195-216) that learning organizations begin with a shared vision and that learning is directed toward that vision. Learning organizations are dependent upon the participation of individuals within a collective vision and the utilization of the potential they possess. All Teacher Education Advisory Committee members will be MVNC graduates or will have had opportunities to work with MVNC students in area public schools. Beneficial information regarding the Teacher Education Program will also be available to the Teacher Education Advisory Committee as a result of questionnaires completed by MVNC graduates and recommendations from a Teacher Education Evaluation Committee resulting from their review of questionnaire data.

The first long-term goal of the multi-year action plan is to provide an educational environment in which MVNC students are able to develop and utilize teacher characteristics and instructional techniques identified as having a positive influence on teaching effectiveness (see Appendix B, p. 20). Longstreet and Shane (1993, pp. 93-108) note that too often, education leaders have been accused of taking a proprietary attitude toward their institutions or to be possessive or defensive about their existing programs. It is the viewpoint of some critics that these educators have shown too little interest in what the public has had to say, perhaps because they themselves were insecure or were insensitive to the feelings of others. MVNC's Teacher Education Program will utilize accountability to the public as an aid to curriculum planning. Although not all influences are harmless, they do deserve hearing. MVNC will take the lead in making use of social influences. As professors welcome ideas, they will be certain that these ideas are in alignment with proven theory and practice, and will determine that assumptions and premises are tested. MVNC will consider fully the feelings of teachers and administrators about education and will act according to their best diagnosis of those feelings. MVNC professors will assume increased responsibility for channeling social and cultural change constructively within the classroom, field experiences, and student teaching experience. Professors will examine instructional strategies that will enable the students to relate this new material to their probable future teaching experiences.

The accomplishment of two objectives will enable the Teacher Education Program to realize this goal (see Appendixes B and C, pp. 20-22). First, MVNC must provide an avenue for identifying teacher characteristics and instructional techniques to be nurtured in Teacher Education Program classroom, field experience, and student teaching contexts. Reoccurring, overlapping themes pertaining to teacher competence do exist. Moore (1995, pp. 3-18) explains that teaching skills fall into three distinct categories: preinstructional, instructional, and postinstructional. Preinstructional skills are those needed by teachers to be effective planners. They include the ability to make observations, write objectives, select materials, select teaching strategies, and develop evaluations. Instructional skills consist of the skills needed by teachers to successfully implement planned lessons. These skills include the ability to communicate, provide stimulus variation, use reinforcement, use questions, manage a classroom, and evaluate lesson objectives. Postinstructional skills are the skills needed by teachers to be effective evaluators. They include the ability to analyze evaluative information and make judgments regarding evaluative information.

Cooper (1994, pp. 2-17) suggests that a well-trained teacher should be prepared in four areas of teacher competence to be effective in bringing about intended learning outcomes. First, teachers must demonstrate a command of the theoretical knowledge about learning and human behavior. Second, teachers must exhibit attitudes that foster learning and genuine human relationships. Third, teachers must be in command of knowledge in the subject matter to be taught. Fourth, teachers must incorporate teaching skills that facilitate student learning.

Douglas (1992, p. 42) stresses that the acquisition of knowledge must be accompanied by the ability to use that knowledge. Experience is a fundamental learning tool to advance such abilities. Mayhew, Ford, and Hubbard (1990, pp. 41-43) argue that teacher training must include more meaningful educational opportunities within elementary and secondary schools. Theoretical knowledge must be integrated with hands-on experiences.

The second objective states that the Teacher Education Program must train cooperating teachers in developing instructional and evaluation techniques to be utilized with students during field experiences and student teaching experiences. Carnevale, Gainer, and Meltzer (1990, pp. 377-397) identify transformational leadership as leadership that "pays attention to what is going on, determines what events are important for the organization's future, sets a new direction, and concentrates the attention of everyone on it." MVNC administrators and Education Department professors will stress that open lines of communication between all project participants and the active involvement of all participants are musts if the project's merits are to be agreed upon and valued. Argyris (1993, pp. 15-48) notes that the awareness of and participation by committee members during the plan development and evaluation process will enhance feelings of ownership and confidence.

A second goal of the multi-year action plan is to identify perceived strengths and weaknesses of the MVNC Teacher Education Program through the collection of data from graduates in their first, second, and third years of teaching (see Appendix D, p. 24). MVNC's development of a questionnaire for the collection of data identifying those perceived strengths and weaknesses of the Teacher Education Program from the graduates perspective is a short-term objective to be accomplished if the second goal is to be realized (see Appendix D, p. 24). Education Department professors must remember that how the educational endeavor is accomplished is just as important as what is accomplished. They must also remember that MVNC needs students. Educators, as professionals, should be independent in much that they do, but they must also listen to what others are saying. The wisdom of MVNC's Teacher Education Program will be enhanced by the graduates assessment of their undergraduate teacher training and their appraisal of teacher characteristics and instructional techniques that have a positive influence on teaching effectiveness.

The third long-term goal of the multi-year action plan is to utilize the development of essential teacher characteristics and instructional techniques within graduates as one strategy for evaluating the MVNC Teacher Education Program's classroom, field experience, and student teaching contexts (see Appendix E, p. 25). The attainment of this goal will be dependent upon the quality of the end result of the accompanying objective. This objective requires that the Teacher Education Advisory Committee be provided with recommendations pertaining to the teacher training process based upon summaries of all data collected from questionnaires completed by graduates in their first, second, and third years of teaching (see Appendix E, p. 25). The Teacher Education Evaluation Committee is to provide the Teacher Education Advisory Committee with these recommendations. As with the Teacher Education Advisory Committee, participant diversity within the Teacher Education Evaluation Committee will result in a beneficial collective vision for all involved and the utilization of the potential they possess.

METHODOLOGY

Watkins and Marsick (1993, pp. 239-256) note that one significant obstacle in the path of learning organizations is tunnel vision. This is an awareness of one's own perspective, but not the complexity of the entire situation. Overcrowded classrooms, management and discipline issues, budget deficiencies, and hectic schedules monopolize much of the time of and attention of public school personnel. Overcrowded classrooms, numerous committee assignments, academic advising, and supervision in the public schools dominate the schedules of MVNC Education Department professors. Genuine desire and effort will be nurtured to yield a cooperative effort throughout the development and implementation of the plan to evaluate the MVNC Teacher Education Program (see Appendix A, p. 19).

The multi-year action plan's first long-term goal is to provide an educational environment in which students are able to develop and utilize teacher characteristics and instructional techniques identified as having a positive influence on teaching effectiveness (see Appendix B, p. 20). To do this, the MVNC Education Department must provide an avenue for identifying essential teacher characteristics and instructional techniques to be nurtured in the Teacher Education Program's classroom, field experience, and student teaching contexts (see Appendix B, p. 20).

The first year of the action plan begins with the selection of members to serve on the Teacher Education Advisory Committee. Committee membership will be representative of a wide range of individuals familiar with MVNC's Teacher Education Program and individuals active in today's public schools. Committee membership will consist of two MVNC Education Department professors, two MVNC professors outside the Education Department with public school teaching experience, three MVNC Teacher Education Program graduates (one elementary teacher, one secondary teacher, and one comprehensive teacher), three public school teachers (one elementary teacher, one secondary teacher, and one comprehensive teacher), two public school superintendents, and two public school principals (one elementary principal and one secondary principal). Committee member recommendations will be made by MVNC Education Department professors. Recommended individuals will be contacted regarding the purpose of the multi-year action plan and their availability to participate (see Appendix B, p. 20).

The first year will be an active year for the Teacher Education Advisory Committee. Subcommittees will be formed to conduct reviews of the Teacher Education Program's current scope and sequence, field experience evaluation forms, student teacher evaluation forms, and literature and research pertinent to effective teacher characteristics and instruction techniques. Subcommittees will then make detailed reports to the entire committee. The result of subcommittee reviews and reports will be Teacher Education Advisory Committee recommendations for changes in the Education Department's scope and sequence, field experience evaluation forms, and student teacher evaluation forms (see Appendix B, p. 20).

During the second year of the action plan, formal and informal dialogue will occur between the Teacher Education Advisory Committee and faculty members within the MVNC Education Department. The purpose of this dialogue will be to gain clarity of understanding and mutual support for the Teacher Education Advisory Committee's recommendations. This clarity of understanding and mutual support will result in the Education Department's development of a new scope and sequence and new evaluation forms for field experiences and student teaching experiences (see Appendix B, p. 20).

The third year of the action plan is identified as the year of implementation. The new scope and sequence will be implemented in MVNC classroom, field experience, and student teaching contexts. The new field experience evaluation forms and student teacher evaluation forms will also be implemented (see Appendix B, p. 20).

The Teacher Education Program faculty members must also train MVNC's cooperating teachers in developing instructional and evaluation techniques to be utilized with students during field experiences and student teaching experiences (see Appendix C, p. 22). Inservicing will be conducted by MVNC's Education Department professors.

Cooperating teacher training sessions will be conducted annually in August. Participant numbers will be capped at 30. During the first year of the action plan, MVNC's Education Department professors will inservice cooperating teachers on the identified essential teacher characteristics and instructional techniques reported by the Teacher Education Advisory Committee. MVNC's professors and the cooperating teachers will investigate the implications of these teacher characteristics and instructional techniques. In the second year, MVNC's professors will begin to inservice cooperating teachers on the newly developed Education Department scope and sequence, field experience evaluation forms, and student teacher evaluation forms (see Appendix C, p. 22).

The multi-year action plan's second long-term goal is to identify perceived strengths and weaknesses of MVNC's Teacher Education Program through the collection of data from graduates in their first, second, and third years of teaching (see Appendix D, p. 24). To accomplish this, the Education Department must develop and implement the usage of a questionnaire to collect the data identifying MVNC graduate's perceptions of the Teacher Education Program's strengths and weaknesses (see Appendix D, p. 24).

During the first year of the action plan, four Education Department professors (two elementary education professor and two secondary education professor) will conduct a review of current literature and research pertaining to the development of questionnaires. The four professors will also procure and review questionnaires from other Teacher Education Programs that are utilized in comparable evaluation endeavors as is being developed by MVNC. The questionnaire will be developed and pretested in the second year of the action plan. The questionnaire pretest will utilize that year's Teacher Education Program elementary, secondary, and comprehensive graduates securing first time teaching positions. During the third year of the action plan, questionnaires will be mailed to newly employed MVNC elementary, secondary, and comprehensive graduates that were impacted by the new scope and sequence, field experience evaluation forms, and student teacher evaluation forms. Questionnaires will again be mailed to these graduates during their second and third years of teaching (see Appendix D, p. 24).

The third long-term goal of the multi-year action plan is to utilize the development of essential teacher characteristics and instructional techniques as one strategy for evaluating the MVNC Teacher Education Program's classroom, field experience, and student teaching contexts (see Appendix E, p. 25). The accomplish this, the Teacher Education Evaluation Committee must provide the Teacher Education Advisory Committee with recommendations pertaining to the teacher training process based upon summaries of all data collected from questionnaires completed by graduates in their first, second, and third years of teaching(see Appendix E, p. 25).

During the action plan's first year, members will be selected to serve on the Teacher Education Evaluation Committee. This is the committee that will ultimately make recommendations to the Teacher Education Advisory Committee. Committee membership will be structured identically to that of the Teacher Education Advisory Committee. Participants will consist of two MVNC Education Department professors, two MVNC professors outside the Education Department with public school teaching experience, three MVNC Teacher Education Program graduates (one elementary teacher, one secondary teacher, and one comprehensive teacher), three public school teachers (one elementary teacher, one secondary teacher, and one comprehensive teacher), two public school superintendents, and two public school principals (one elementary principal and one secondary principal). Initially, committee members will review the changes recommended in MVNC's scope and sequence, field experience evaluation forms, and student teacher evaluation forms (see Appendix E, p. 25).

During the second and third year of the action plan, the Teacher Education Evaluation Committee will focus its attention on the questionnaire results. In the second year, committee participants will review the results of the pretest questionnaires, and investigate the implications of the data from the pretest questionnaires. In the third year, committee participants will review the results of the questionnaires completed by graduates in their first year of teaching and investigate the implications of the data from the questionnaires. Committee participants will then recommend changes in the MVNC Education Department's scope and sequence, field experience evaluation forms, and student teacher evaluation forms. This process will be repeated for questionnaires completed by the same graduates during their second and third years of teaching. All recommendations will be given consideration by the Teacher Education Advisory Committee and the MVNC Education Department (see Appendix E, p. 25).

EVALUATION

Throughout the development and implementation of a plan for the evaluation of the Teacher Education Program, MVNC's administrators and Education Department professors will be promoting an outreach to MVNC graduates and area public school personnel. Their participation in the development and implementation of a meaningful evaluation process will strengthen the awareness of, interest in, and respect for the MVNC Teacher Education Program.

The multi-year action plan's first long-term goal is to provide an educational environment in which students are able to develop and utilize teacher characteristics and instructional techniques identified as having a positive influence on teaching effectiveness. This will be accomplished by a review of the current scope and sequence, field experience evaluation forms, student teacher evaluation forms, and literature and research pertaining to effective teacher characteristics and instructional techniques. During the first year of the plan, the Teacher Education Advisory Committee, including MVNC graduates, MVNC professors, and area school personnel, must agree upon recommended changes in MVNC's scope and sequence, field experience evaluation forms, and student teacher evaluation forms. During the second year, MVNC professors are given time to establish plans for implementation of the recommendations. During the third year of the plan, the success of implemented recommendations will be confirmed by an increase in the satisfaction and learning of MVNC's students and by the exhibition of desired competencies (see Appendix B, p. 20).

The action plan's first long-term goal will also be actualized by training MVNC's cooperating teachers in developing instructional and evaluation techniques to be utilized with students during field experiences and student teaching experiences. During all three years of the action plan, the cooperating teachers' support of identified essential teacher characteristics and instructional techniques, the scope and sequence, and evaluation forms for field experiences and student teachers will be sought and achieved (see Appendix C, p. 22).

The multi-year action plan's second long-term goal is to identify perceived strengths and weaknesses of the Teacher Education Program through the collection of data from graduates in their first, second, and third years of teaching. A questionnaire will be developed and utilized to collect this data. Recommendations for questionnaire development will be completed during the first year of the action plan. The questionnaire will be pretested for validation purposes during the second year. In the third year of the action plan, a minimum graduate questionnaire response rate of 50% will be considered acceptable (see Appendix D, p. 24).

The utilization of the development of essential teacher characteristics and instructional techniques within graduates as one strategy for evaluating the Teacher Education Program's classroom, field experience, and student teaching contexts is the multi-year action plan's third long-term goal. The Teacher Education Evaluation Committee, consisting of MVNC professors, MVNC graduates, and area school personnel, will be the impetus behind this goal's accomplishment by reviewing and investigating the results of the graduates' questionnaire data. Recommendations for change within the scope and sequence, field experience evaluation forms, and student teacher evaluation forms will be made to the Teacher Education Advisory Committee. During the three years of the action plan, the Teacher Education Evaluation Committee will be in agreement regarding all recommendations before those recommendations are made to the Teacher Education Advisory Committee (see Appendix E, p. 25).

BUDGET

The North Central Association of Colleges and Universities has requested all departments of education in institutions of higher learning with active accreditation granted prior December of 1993 to prepare a formal plan for assessment of student outcomes to provide professors with enhanced curricular and instructional improvement opportunities. In the near future, MVNC's Teacher Education Program will be evaluated by the National Council for Accreditation of Teacher Education to determine accreditation status. MVNC Education Department professors and institution administrators are convinced that the implementation of this evaluation plan will strengthen efforts to comply with both mandates. Financial support for the multi-year action plan does and will continue to exist.

Total budget allocations for implementation of the Teacher Education Program's three-year evaluation action plan are $8,000. First year expenses are $2,200. Second year totals are $2,650. Third year expenses are $3,150. Xeroxing, reviews of literature and research, tokens of appreciation, mailing, and phonecalls constitute the reasoning behind these budget projections. Two significant factors will help hold the cost of this three-year evaluation action plan down. First, no separate allocations will be provided for the time of the MVNC Education Department's professors and secretary. Second, the funds for cooperating teacher training stipends of $150. are already allocated in annual institution budgets (see Appendixes B-E, pp. 20-25).

CLOSING COMMENTS

MVNC's positive working relationship with area public schools, a genuine desire of the MVNC Teacher Education Program, will benefit from school personnel input. Meaningful curriculum decisions within the teacher training process can be made by focusing on knowledge and competencies required in field experiences and student teaching. The Education Department will do a better job of helping future teachers attain essential teacher characteristics and instructional techniques with a relevant, thorough, and challenging evaluation process.

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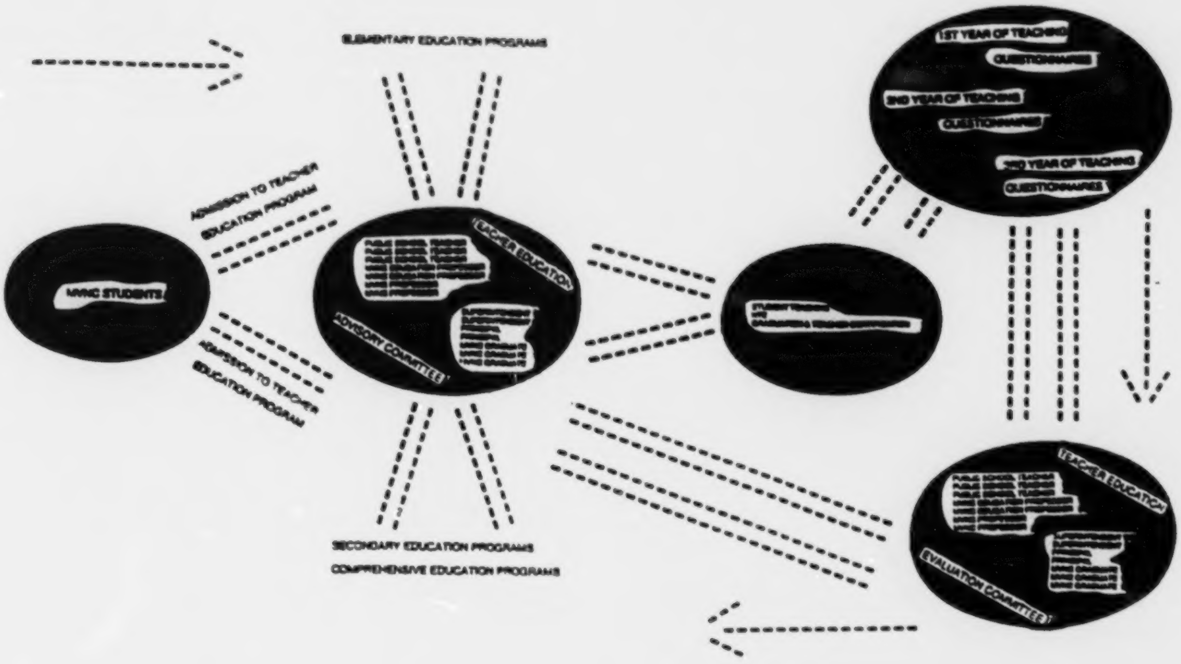
APPENDIXES

Appendix A

Diagram of Plan for Evaluation of Mount Vernon Nazarene College Teacher Education Program


ELEMENTARY EDUCATION PROGRAMS
ADMISSION TO TEACHER EDUCATION PROGRAM
MVNC STUDENTS
TEACHER EDUCATION
ADVISORY COMMITTEE
ADMISSION TO TEACHER EDUCATION PROGRAM
SECONDARY EDUCATION PROGRAMS
COMPREHENSIVE EDUCATION PROGRAMS
1ST YEAR OF TEACHING
QUESTIONNAIRES
2ND YEAR OF TEACHING
QUESTIONNAIRES
3RD YEAR OF TEACHING
QUESTIONNAIRES
TEACHER EDUCATION
EVALUATION COMMITTEE

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Appendix B

Mount Vernon Nazarene College

Program Evaluation Action Plan Teacher Education Program

Goal 1: Provide an educational environment in which students are able to develop and utilize teacher characteristics and instructional techniques identified as having a positive influence on teaching effectiveness.

Objective 1.1 To provide an avenue for identifying essential teacher characteristics and instructional techniques to be nurtured in Teacher Education Program classroom, field experience, and student teaching contexts.

	Year 1	Year 2	Year 3
Method	Select members to serve on Teacher Education Advisory Committee.	Promote integration of the Teacher Education Advisory Committee's recommendations.	Implement new scope and sequence in classroom, field experience, and student teaching contexts.
	Conduct a review of current scope and sequence; field experience evaluation forms; student teacher evaluation forms; literature and research pertinent to effective teacher characteristics and instruction.	Develop new scope and sequence; field experience evaluation forms; student teacher evaluation forms.	Implement new field experience evaluation forms and new student teacher evaluation forms.
	Recommend changes in scope and sequence; field experience and student teacher evaluation forms.		

Goal 1: Provide an educational environment in which students are able to develop andutilize teacher characteristics and instructional techniques identified as having a positive influence on teaching effectiveness.

Objective 1.1 To provide an avenue for identifying essential teacher characteristics and instructional techniques to be nurtured in Teacher Education Program classroom, field experience, and student teaching contexts.

	Year 1	Year 2	Year 3
Evaluation	Recommendations completed.	Professors establish plans to implement recommendations.	Identified teacher characteristics and instructional techniques utilized in classroom, field experience, and student teaching contexts. Increased satisfaction and learning of students. Desired competencies exhibited by students.
Budget	Xeroxing - $250. Review of literature/research - $100. Tokens of appreciation - $500. Mail/Phonecalls - $200. Time of secretary/ staff - No separate allocation.	Xeroxing - $250. Tokens of appreciation - $250. Mail/Phonecalls - $200. Time of secretary/ staff - No separate allocation.	Xeroxing - $500. Tokens of appreciation - $250. Mail/Phonecalls - $200. Time of secretary/ staff - No separate allocation.

Appendix C

Mount Vernon Nazarene College

Program Evaluation Action Plan Teacher Education Program

Goal 1: Provide an educational environment in which students are able to develop and utilize teacher characteristics and instructional techniques identified as having a positive influence on teaching effectiveness.

Objective 1.2: To train cooperating teachers in developing instructional and evaluation techniques to be utilized with students during field experiences and student teaching experiences.

	Year 1	Year 2	Year 3
Method	Inservice cooperating teachers on identified essential teacher characteristics and instructional techniques. Investigate with cooperating teachers the implications of essential teacher characteristics and instructional techniques.	Inservice cooperating teachers on new scope and sequence; field experience evaluation forms; student teacher evaluation forms.	Inservice cooperating teachers on new scope and sequence; field experience evaluation forms; student teacher evaluation forms.
Evaluation	Cooperating teachers verbalize agreement with identified essential teacher characteristics and instructional techniques.	Cooperating teachers verbalize support of new scope and sequence and new evaluation forms.	Cooperating teachers verbalize support of new scope and sequence and new evaluation forms.
Budget	Xeroxing - $250. Mail/Phonecalls - $200.	Xeroxing - $500. Mail/Phonecalls - $200.	Xeroxing - $500. Mail/Phonecalls - $200.

Goal 1: Provide an educational environment in which students are able to develop and utilize teacher characteristics and instructional techniques identified as having a positive influence on teaching effectiveness.

Objective 1.2 To train cooperating teachers in developing instructional and evaluation strategies to be utilized with students during field experiences and student teaching experiences.

	Year 1	Year 2	Year 3
Budget	Cooperating teacher stipend of $150. Funds already allocated in annual budget. Time of secretary/ staff - No separate allocation.	Cooperating teacher stipend of $150. Funds already allocated in annual budget. Time of secretary/ staff - No separate allocation.	Cooperating teacher stipend of $150. Funds already allocated in annual budget. Time of secretary/ staff - No separate allocation.

Appendix D

Mount Vernon Nazarene College

Program Evaluation Action Plan
Teacher Education Program

Goal 2: To identify perceived strengths and weaknesses of the Teacher Education Program through the collection of data from graduates in their first, second, and third years of teaching.

Objective 2.1 To develop a questionnaire for the collection of data from graduates in their first, second, and third years of teaching identifying perceived strengths and weaknesses of the Teacher Education Program.

	Year 1	Year 2	Year 3
Method	Conduct a review of current literature and research pertaining to the development of questionnaires and of comparable questionnaires utilized in other Teacher Education Programs.	Develop the questionnaire. Pretest questionnaire.	Mail questionnaires to graduates in their first year of teaching.
Evaluation	Questionnaire recommendations completed.	Questionnaire developed and validated.	50% response rate considered acceptable.
Budget	Review of literature/ research - $100.	Xeroxing - $100.	Xeroxing - $100.
	Time of secretary/ staff - No separate allocation.	Time of secretary/ staff - No separate allocation.	Time of secretary/ staff - No separate allocation.
	Mail/Phonecalls - $50.	Mail/Phonecalls - $250.	Mail/Phonecalls - $250.
		Tokens of appreciation - $250.	Tokens of appreciation - $250.

Appendix E

Mount Vernon Nazarene College

Program Evaluation Action Plan
Teacher Education Program

Goal 3: To utilize the development of essential teacher characteristics and instructional techniques within graduates as one strategy for evaluating the Teacher Education Program's classroom, field experience, and student teaching contexts.

Objective 3.1 To provide the Teacher Education Advisory Committee with recommendations pertaining to the teacher training process based upon summaries of all data collected from questionnaires completed by graduates in their first, second, and third years of teaching.

	Year 1	Year 2	Year 3
Method	Select members to serve on Teacher Education Evaluation Committee.	Review results of the pretest questionnaires.	Review results of questionnaires completed by graduates in first year of teaching.
	Review changes recommended in scope and sequence; field experience and student teacher evaluation forms.	Investigate the implications of the data from pretest questionnaires.	Investigate the implications of the data from the questionnaires.
			Recommend changes in scope and sequence; field experience and student teacher evaluation forms.
Evaluation	Verbalize support of recommended changes.	Verbalize agreement with identified implications of the data from pretest questionnaires	Verbalize agreement with completed recommendations for Teacher Education Advisory Committee.

Goal 3: To utilize the development of essential teacher characteristics and instructional techniques within graduates as one strategy for evaluating the Teacher Education Program's classroom, field experience, and student teaching contexts.

Objective 3.1 To provide the Teacher Education Advisory Committee with recommendations pertaining to the teacher training process based upon summaries of all data collected from questionnaires completed by graduates in their first, second, and third years of teaching.

	Year 1	Year 2	Year 3
Budget	Xeroxing - $100.	Xeroxing - $200.	Xeroxing - $200
	Mail/Phonecalls - $200.	Mail/Phonecalls - $200.	Mail/Phonecalls - $200.
	Tokens of appreciation - $250.	Tokens of appreciation - $250.	Tokens of appreciation - $500.
	Time of secretary/ staff - No separate allocation.	Time of secretary/ staff - No separate allocation.	Time of secretary/ staff - No separate allocation.

DEVELOPMENT OF A QUESTIONNAIRE FOR THE CERTIFIED NETWORK ADMINISTRATOR COURSE

Computer Information Networks

James E. Barger
Virginia Beach City Public Schools

Richard Hoehlein
Richmond Cluster

A practicum report presented to Programs for Higher Education
in partial fulfillment of the requirements for the
degree of Doctor of Education

Nova Southeastern University
February, 1996

Abstract of a practicum report presented to Nova Southeastern
University in partial fulfillment of the requirements
for the degree of Doctor of Education

DEVELOPMENT OF A QUESTIONNAIRE FOR THE CERTIFIED NETWORK ADMINISTRATOR COURSE

by

James E. Barger

February, 1996

The problem under investigation was that the Virginia Beach City Public Schools did not know if the certified network administrator (CNA) course housed at the Virginia Beach Technical and Career Center met the current Novell training standards. The purpose of this study was to develop a questionnaire that would determine if the CNA course was meeting the standards required by Novell Corporation. The research questions were "What criteria should be included in a questionnaire that assesses a business education course for Novell standards?" and "What are the appropriate design elements of such a questionnaire?".

The procedures used to conduct this study included the review of literature related to total quality management, industry certifications, and questionnaire development.. The formative committee met for three months to review the literature and determine the content of the final questionnaire which was submitted to the summative committee for approval. After approving the proposal the summative committee submitted the proposal to the school administration for approval.

As a result of the research conducted, the committee determined that the criteria for evaluating the course should be based on the Novell certification requirements for industry-approved training centers. The committee concluded that a signature area for the evaluators to

sign, questions relating to completion of lesson plans and student competencies be added to the questionnaire in addition to questions assessing the Novell requirements. The committee recommended that data pertaining to per pupil costs be collected on an annual basis. The committee also recommended that the questionnaire be used to evaluate the business computer labs in all 10 high schools in Virginia Beach. In addition, the committee recommended that the per pupil costs and the computer lab evaluation results be reported each year in the technical and career education annual report for the purpose of benchmarking the development of industry-certified programs.

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Chapter 1

INTRODUCTION

The Virginia Beach City Public School Division is located in Virginia Beach, Virginia. The community is made up of a large contingent of military families. Virginia Beach strives to provide a quality education for 74,000 students in grades K-12. A traditional approach to education, with emphasis in the core academic disciplines, is supported by the local school board. In addition, in 1994 the local school board adopted a five year strategic plan (Virginia Beach City Public Schools, 1994, pg. 6) that clearly identifies technical and career education as a school board priority. This has helped to direct funds and administrative energy into projects that have enabled Virginia Beach to become a leader in technical and career education.

Nature of the Problem

As part of the new school board priority on technical and career education, the superintendent of schools had directed the staff of the office of technical and career education to begin the process of prioritizing and aligning all of its course offerings with established industry skill standards. The purpose of this task was to make it clear to industry and community leaders that Virginia Beach City Public Schools are committed to training its students to the higher industry standard, not a standard set by the educational community. The problem was that the school system did not know if the certified network administrator course housed at the Technical and Career Education Center met the current Novell training standards.

Purpose of the Study

The purpose of this study was to develop a questionnaire for the computer network administrator course that would allow the school system to ascertain if the course, which includes the computer lab, curriculum, and teacher requirements, was meeting the standards set by the Novell Corporation.

Significance to the Institution

The development of this questionnaire will provide the staff of the office of technical and career education with a process to determine if the certified network administrator course is in compliance with Novell standards. Additionally, this questionnaire will help to determine what business education computer labs across the school division are in compliance with the standards set by Novell Corporation. This will help to identify the schools eligible for expansion of the certified network administrator course. Also, by using the standards set by Novell as the basis for this questionnaire, the image of technical and career education was improved.

Relationship to Seminar

This practicum was directly related to the Computer Information Networks seminar in that it directly related to the training of individuals who will be working on the local area networks connecting to the internet. In addition, the Plan, Do, Check, Act cycle of continuous improvement made popular by Deming (1992, p. 88) and Bonstingl (1992, pp. 51-69) and discussed in the seminar was utilized in the questionnaire development process.

Research Questions

Two research questions were posed for this study. First, "What criteria should be included in a questionnaire that assesses a business education course for Novell standards?" Second, "What are the appropriate design elements of such a questionnaire?"

Definition of Terms

Several terms are defined to add clarity to this project.

Certification. Endorsement of attained skills by an agency outside of the educational institution.

Industry. The business, corporation, or guild that establishes the standards for a particular skill, or trade.

Chapter 2

REVIEW OF THE LITERATURE

Overview

The review of literature was organized in three general areas to review the research that was available. The first literature area examined industry certification. Industry certifications are usually granted by corporations that have established standards for specific skills. The second literature area focused on Total Quality Management (TQM). The literature related to TQM both currently in use in schools, and in industry. Finally, the third literature area reviewed was questionnaire development. This area of literature overviewed questionnaire use, purpose, and curriculum design.

Industry Certification

As with any new program to be offered in public schools, vocational-technical administrators must insure that the programs they offer are going to provide students with opportunities for positive work experiences after graduation. Martin & Tolson (1991, p.1) project the job market for certified computer programmers to grow in the next ten years by 50 % nationally and by 53 % in Virginia, which is much faster than the average growth rate for all occupations. By basing new training programs on high-growth industry-certified programs, schools will be able to justify additional costs for the equipment needed to operate these programs. Projected earnings of employees must also be a consideration of any new technical program. "Network Support Salary Survey" (1995) states that the vocational/technical school graduate can earn an average salary of $43,229.00 and the college graduate can earn $44,772.00.

Many school administrators are fearful of adopting industry certifications in the classrooms because of what they consider to be very narrow objectives for teaching skills. Specifically, in Virginia Beach instruction in the business education computer labs offer students several various types of word processors, spreadsheets, and databases as shown in the Student Guide to the Senior High School Curriculum (1995, pp. 30-33). Each instructor may teach the software program that they feel comfortable with. Therefore the school system is basing the skills of what they are teaching on the preference of the instructor, not on the needs of the industry. In order to establish industry endorsed programs, schools will need to adopt training standards and curriculums based on the specific needs of industry. This will allow industry to permit the certification of students prior to entering the workforce.

While discussing the usefulness of certifications, St. Clair (1995) explains that "In lieu of more formal educational degrees, vendor certification has become one of the primary ways to measure people's knowledge and competency" (p. 6). Finney (1995) gives the following example, "Siemens was unable to get precision toolmakers for a new plant they were opening in Kentucky. The company had to resort to recruiting them from Germany and Switzerland. They made a corporate decision to try to hire Americans who seemed to have certain skills on paper, but their certificates didn't turn out to mean anything" (p.19) . Stone's (1991 p. 46) research shows that industry currently spends between 30 to 40 billion dollars annually on formal training programs for employees. Industry has been forced to train their employees because of the inadequate training being done by not only the secondary schools, but also post-secondary. Some of this blame can be laid at the rapid pace in which technology has been changing, but the fact that schools have been reluctant to ask industry of their needs has not improved the situation. By adopting industry certifications for students, school divisions will be adding accountability for not only what the teacher is teaching, but also what the student is learning. Educational institutions can better prepare their students to compete in the high-tech industry by providing training that helps students gain these industry-recognized certification credentials (Microsoft 1995 p. 1). Industry-certified programs will also begin to answer the question posed by T. Koerner (personal communication, September 6, 1995) of how do we match employers and employees in a way that will work for both parties.

Microsoft Corporation (1994, p.1) notes that by preparing high school students with industry-certified skills, marketability of these students, creditability of the educational system, and the technical skills of the community labor pool will increase. St. Clair (1995) also states that "Whether it be a major university, a local community college, or an area high school, academic institutions are beginning to offer vendor certification as part of their curriculum" (p. 14). The U. S. Department of Labor (1991, p. 25) concluded that school administrators must consider the highly competitive workforce that is currently in place world-wide. Schools must produce students who can be productive as soon as they enter the workforce, not several years later. Educators need to understand the connection industry certifications have in hiring prospective employees. As Wills (1994, p.117) discusses, industry certification programs are driven by the technologies of the workplace and the needs of the employer. "OCAP to Career Passport" (1995 p.1) relates how industry is using certifications as a yardstick to compare prospective employees because of the standardization of the skills needed to acquire the certification. Industry also wants skills that are adequately assessed and reported in a way that communicates these skills accurately to the prospective employer. Clark (1995 p. 29) states that research conducted over the past 24 months by a number of organizations suggests that sponsors of certified support personnel expect and receive added value, increased efficiency, and improved performance from their certified employees. St. Clair (1995) goes on to say that "Although certification definitely does not provide the ultimate measure, right now it is just about the only gauge companies have" (p. 14).

Total Quality Management

Anytime groups come together to make decisions, compromise between individuals must occur to achieve the goal that has been targeted. Consensus decisions are group decisions where the group allows input from all group members, and from that input arrives at a decision that creates a higher level process. In order to insure that the group has had input, Patterson (1993 p. 55) recommends the following two ground rules be followed:

1. Have the following questions have been asked:
    * Has everyone been involved in the problem solving process?
    * Have we listened to all points of view, including the unpopular ones?

- Have any conflicts within the group been addressed, and reconciled?
- Has the group had time for reflection?
- Has the group reached the stage of , I could be wrong, and you could be right?

2. Does at least 85 % of the group support it.

Otherwise if administrators do not provide some type of structure to the group meetings or activities, these meetings can serve as garbage cans into which problems are dumped (Bolman & Deal, 1990 p. 175).

In discussing the TQM process at work within higher level administration, Bonstingl (1992 p. 36) and Disney University (1995 p.2) agree that in order to do things right the first time, administrators must allow groups to participate in the decision making process. By having a long range vision of where the organization is going, groups can be creative in the process and have buy in to the decisions that must be made. If organizations are to implement TQM into the workplace or classroom, they must follow up on the decisions made by groups utilizing the TQM processes. Serratt (1995 p. 43) explains that schools should be less like factories and more like best-in-class, high-tech companies.

The implementation of TQM into any workplace requires that top level leadership support the initiative. What is quality management (1991 p.1) states that Quality management is an exciting leadership technique that uses employee ideas to continuously improve the processes and the quality of services provided. As Crouch (1993) discusses, " TQM works. Scores of organizations have seen powerful gains in quality, productivity, customer satisfaction and competitiveness" (p.3). Top leadership must provide direction to the staff of the organization so that the new direction of the organization is focused. Teachers and staff members are quick to differentiate between what new administrative processes are valid and those that are not. The goal of TQM in the educational setting is, as Anderson (1993 p. 4) explains, to influence a change within the total school.

But, as change can be good, it comes hard in educational settings. While discussing organizational change, Barker (1992) discusses "that most people know the future only as a place that is always robbing them of their security, breaking promises, and changing the rules on them. Yet, it is in the future where our greatest leverage is" (p. 18). As Pughsley (1995) states, "the strategies of TQM encourage people to own the problem, its solution, implementation, evaluation, and ongoing improvement" (p. 1). By giving people the skills and the tools to solve routine problems, the organization can improve overall morale and employee loyalty. As Jenkins (1995) emplores, "school leaders must push ahead to break through this struggle and continue to strive for a system of American education that values all students and their success" (p. 33). Gates (1995 p.36) explains that school administrators must create an environment called a positive spiral. When your organization is doing the right things, other people and organizations pay attention to what you are doing and they emulate the activities and surroundings common in your organization. This creates a sense of excitement with employees and customers allowing the spiral to continue, thus making the success easier.

By empowering the teachers and administrators, many of the TQM strategies and skills are beginning to be implemented into the classroom. "Students are beginning to apply quality process skills to continually assess their progress in learning relative to clear objectives" (Pinellas County Schools, 1994 p. 1). With teachers showing students how to apply TQM skills into the classroom, students are learning to view themselves as members of a larger system and as such, to make contributions which address the best interest of the school and the community. U.S. business leaders see the benefits they receive when we train students in our schools in these business management techniques and strategies. They know our graduates will find it easier to adapt to the business world (McKenzie, 1995 p. 231). Many teachers have realized that the concepts and strategies that are associated with TQM are in fact the very same that they have believed in for years. Johnson (1995) describes her experience with quality as "I have found TQM to be effective with a wide-range of student abilities and appreciate the higher-level thinking skills that are utilized in many strategies" (p. 1). Teachers and students must be allowed to use the TQM tools and strategies to create new ways of learning. Teachers for years have known that sometimes the best way to learn is by making mistakes. Gates (1995) emphasizes "almost no single mistake is fatal" (p. 64). It is also important to acknowledge mistakes and make sure you draw some lesson from them. It is also important to make sure that no one avoids trying something because they think they will be penalized for what might happen (Gates 1995, p. 64).

National organizations have begun to rally behind teaching TQM skills to students in all grade levels. As VICA's total quality curriculum (1995) notes "We can train students to learn the quality concepts, and we can also train teachers to better instruct using TQM methodologies. It only makes common sense" (p. 11). Many educators feel that what has worked for all these years is going to work for the future. This just isn't a realistic view of the educational future. As Hiam (1992) states " The problem is that U.S. schools have not trained new entrants to the job force in the skills and concepts needed to participate in quality improvement processes "(p. 239). The problem with the "What was good enough for me" attitude is emphasized when Axland (1992 p. 67) states that a growing number of Americans are just now beginning to understand that our national competitiveness, our jobs, and our standard of living depend on the quality of our work product and the process involved to produce it. Even though the transition to implementation of TQM concepts into the classroom will be long and in some cases bumpy Konopnicki (1995) believes that "this innovation has the power to impact the systemic root causes of the multifaceted problems apparent in public education (p. 1).

Questionnaire Development

The Busche' (1995 p.1) defines a questionnaire as a written set of questions to which the respondent records his or her answers within closely defined alternatives. Since industry-certified programs are new to secondary and post-secondary technical program offerings, it will be necessary to evaluate established industry-certified programs as well as existing programs to determine if they are in compliance with the proper industry standard. Isaac and Michael (1995) state that "questionnaires are the most widely used technique in education and the behavioral sciences for the collection of data" (p.136). When using questionnaires, it is necessary to remember as S. Keen (personal communication, July 27, 1995) states that " A questionnaire is not the solution, its a step to solving the problem". A questionnaire itself will not solve a problem; it is only a step in the process that will allow the collection of data to help the researcher define the problem, or problems, and begin to create a solution.

McMillian and Schumacher (1993 p. 36) explain that closed form surveys are used frequently in educational research to describe attitudes, beliefs, opinions, and many other types of information. Additionally, McMillian and Schumacher (1993 p. 284) go on to say that survey research is not simple to prepare or conduct There are many factors related to item format, positioning of questions, wording, sampling, and other variables that need to be considered.

Another consideration in developing a questionnaire to evaluate a educational program is the goals and objectives established by the course curriculum (Stiggins, 1994 p. 317). In order to effectively fashion a valid questionnaire the curriculum design must be reviewed and if possible reflected in the questionnaire.

Currently within the educational ranks, there seems to be a raging debate as to whether industry certification is appropriate. Educators for a long time have been used to determining what was taught in the curriculum. Making changes to the curriculum to incorporate industry certification may border on implementing outcome based education (OBE). Artis (1994) describes OBE in the following way, "A core tenet of OBE is that students must show how they can use knowledge rather than merely posses knowledge for its own sake" (p. 26). But Artis (1994) goes on to say that "many educators and parents across North America see that the idea of students demonstrating clearly what they know, what they can do with what they know and how they consistently demonstrate competence makes good sense. Many vocational-technical educators have known this for years" (p.27). Anderson (1994, p. 76) maintains that with the implementation of OBE, creative-thinking, problem-solving, interpersonal skills, teamwork, leadership, and goal-setting are additional basic skills that schools must implement into the curriculum. Educators who are committed to the outcome-based approach are no longer concerned with covering content or chapters in a text but with helping their students master the identified learner outcomes.

Plawin (1995) states, "State policies also are changing with regard to the types of skills to be measured. The greatest expansion will occur in testing or assessment of job-specific skills" (p. 33). Walker (1995, p. 25) explains that for most of its industry certification programs, including the Certified NetWare Administrator program, Novell Corporation offers performance-based tests. A performance-based test differs from a traditional test in that it measures a person's ability to apply, as well as to repeat, facts. Torff (1995) goes on to say that "Curriculum and assessment ought to encompass activities valued in the real world" (p. 2).

Schools have been developing curriculum for instruction for many, many years. For a long time it was thought that only the schools could determine the curriculum and how it would be delivered to the student. This allowed teachers and administrators to determine what should be taught and many times the curriculum that was developed was not used by the teacher. Jacobs (1995) breaks the old paradigm when she states, "The old style of curriculum writing stored in books on dusty shelves filed away is no longer suited to our time with the exponential growth of knowledge" (p.1). Mullin (1991) adds "However, the important thing to remember, of course, is that a curriculum should be designed to maximize the education of students rather than the satisfaction of teachers" (p. 93). Charp (1995) challenges traditional educators to insure that "whatever technological tools are available must be used by well qualified, well trained individuals at the right time and in the most appropriate manner" (p.4). Mulford (1995) notes that schools should "design programs for constant updating and upgrading of curriculum, equipment and software" (p. 37). Scrogan (1995) supports this statement when he says "Teachers need to learn techniques and strategies that will help them fit technology into the learner's curriculum" (p. 39). Gates (1995 p. 184) explains that since corporations are reinventing themselves around the flexible opportunities afforded by information technology, educational classrooms will have to change in order to prepare the workforce of tomorrow.

Summary

Overall, the literature review showed that jobs in the computer networking industry are rapidly increasing and that vocational/technical graduates with industry-certified training can earn almost as much as a college graduate. The literature research also showed that students with industry-accepted skills will be more sought after than students that do not have industry-certified skills. The literature also discussed how even though certifications may not be the best solution, it is the best evaluation tool that industry currently has available to evaluate potential employees.

Another area researched was Total Quality Management (TQM). The research discussed how higher level administration will need to buy into the concepts and philosophies of TQM in order for the teachers and students in America's classrooms to be able to have the freedom to be creative and adapt those very same concepts into new learning techniques. The research that relates to TQM parallels some of the same ideas discussed in the Industry Certification literature. When focusing on the training being provided by American schools, both bodies of literature reflect an attitude that schools are not providing students with the necessary skills to compete in tomorrow's workforce. Both areas discuss innovation that must occur in existing classrooms in order for new types of learning to occur.

The final area researched was the area of questionnaire design. The research showed that conducting questionnaires is not an easy task. A researcher cannot just draft a questionnaire until several variables are considered and implemented into the survey instrument. The literature discusses areas that must be considered when developing a questionnaire, including, curriculum design, use of questionnaires and format. The research also discussed the fact that questionnaires are merely a step in the process that allows collection of data. This concept of process development is compared back to the plan, do, check, and act (PDCA cycle) discussed by Bonstingl (1995 p. 60) in the TQM literature.

The research found that literature based on previous evaluations of industry-certified programs was not available. Even though long term benefits of industry-certified programs are currently unknown, the establishment of this tool will allow the school system to evaluate the business computer labs to determine if the current CNA program can be expanded.

Chapter 3

METHODOLOGY AND PROCEDURES

Problem Solving Methodology

Since the end result of this process is to produce a questionnaire for evaluation of business education computer labs, the developmental methodology was selected.

Procedures

First, a review of the literature was conducted. The literature review included topics related to total quality management, industry certifications, and questionnaire development. The literature was gathered using internet searches, current educational and industry journals, and educational conferences that described the various aspects involved in housing and operating a Novell approved computer lab. Additionally, the literature covered requirements for the use of total quality management concepts in the classroom, and the most common types and formats used in educational questionnaire development.

Second, a formative committee was created to discuss the issues and industry requirements for the certified network administrator course and provide feedback during the questionnaire development process. The questionnaire criteria was based on the criteria developed by the formative committee made up three staff members from the Virginia Beach City Public Schools and one representative from the computer networking industry, who has been working with the course for the past year. The four members were chosen by the director of technical and career education to represent a cross section of the various groups involved in the certified network administrator program. The final members of the committee included the coordinator of total quality management (who provided TQM training to the CNA instructor and the students), the coordinator of computer networks (who helped to develop the on-the-job work experience component), and a School-to-Work Specialist. The coordinator of a local computer network training company, who helped to develop the course, represented the computer network industry. A complete list of the formative committee is included in Appendix A.

Third, the formative committee met monthly for three months (October and December of 1995 and January of 1996) with each meeting lasting approximately 3 hours. During these meetings, literature related to teacher requirements, lesson plans, curriculum development, equipment requirements, and questionnaire design was reviewed and discussed. From these discussions, the committee complied the criteria for the questionnaire. Minutes of these meetings are included in Appendix B.

Fourth, a summative committee was formed to validate the criteria for the questionnaire established by the formative committee. The committee met in December 1995 to review and validate the criteria-designed by the formative committee. Minutes of this meeting are included in Appendix C. This summative committee was made up six volunteers from the school division, and local industry. The group included the coordinator of computer networks, the principal of the technical and career education center, a student volunteer, a representative of the Virginia Beach City Public Schools educational planning center and the director of technical and career education. Additionally, a training specialist from a local computer network training center represented the computer industry on the committee. A complete listing of committee members is included in Appendix D.

Fifth, based on the criteria developed by the formative committee, and validated by the summative committee, a draft of the questionnaire was prepared by the researcher. The questionnaire was broken down into six categories. Classroom, hardware, software, teacher, curriculum and optional requirements each contained questions designed to evaluate the course based on the criteria established by the formative committee. The draft questionnaire was submitted to the formative committee for final review and comment in the January 1996 meeting (see Appendix B).

Sixth, the completed draft was presented to the summative committee for review and validation in its January 1996 meeting (see Appendix C). The summative committee reviewed and approved the questionnaire for face validity as well as content validity. The committee discussed the possible expansion of the course and the value of having a comprehensive questionnaire to determine the possible locations for the expansion of the program.

Seventh, the approved questionnaire was submitted to the associate superintendent for instruction for final approval. A copy of the product is included in Appendix E.

Assumptions

For this practicum, it was assumed that the members of the formative committee would have the educational background and knowledge needed to help guide the development of the questionnaire. In addition, it was assumed that the members of the formative and summative committees would provide honest and thorough feedback.

Limitations

The questionnaire was limited in that it assessed the certified network administrator course based on current Novell standards. This limited the requirements to a specific corporation. In addition, the questionnaire reflected the formative committee's perspective of a Novell certified program.

Chapter 4

RESULTS

First, a review of the literature was conducted. The review included topics related to total quality management, industry certifications, and questionnaire development. During the review process, the formative team wanted the researcher to find more information regarding the use of total quality management and how it has been used in the educational classroom. This focused the literature review for total quality into specific information relative to implementation of total quality into the classroom.

The literature also overviewed industry certifications, but the committee honed in on the material related to Novell certifications since this is the premise of the program. The committee, and the researcher also reviewed literature related to different type of questionnaires, specifically those questionnaires using open, and or closed ended questions.

Second, a formative committee was formed to review the literature and draft the criteria for the questionnaire to be used to evaluate the certified network administrator program. The committee was selected by the director of technical and career education. The committee members were the coordinator of total quality management for the school division, the coordinator of computer networks, a school-to-work specialist, and a representative from the computer industry. The director of technical and career education wanted to insure that the formative committee consisted of the persons who had been involved with the direct planning and implementation of the original program from its inception, and had knowledge of the networking industry.

Third, the formative committee met on October 29, 1995, December 7, 1995, and January 11, 1995. The meetings were held at the Virginia Beach Technical and Career Center in the principal's conference room from 2:15 p.m. to 5:00 p.m.. During these meetings, the committee reviewed the various literature and discussed topics related to lesson plans, networking certifications, curriculum design, equipment requirements, teacher requirements, software requirements, classroom design, and questionnaire design. The committee focused on two basic areas for its development of criteria for the questionnaire, questionnaire design, and Novell certification training requirements.

The committee felt strongly that the Novell requirements for equipment, software, and peripherals had to be followed in order for the course to retain its industry-certified endorsement. The committee also reviewed questionnaire design with particular interest in the area of educational questionnaires. The committee determined that the questionnaire should use a close-ended question format. Additionally the committee categorized the requirements into six categories: software, classroom, hardware, teacher, curriculum, and optional requirements.

The committee requested that the researcher add an area at the bottom of the questionnaire to allow for signatures of those persons completing the questionnaire. The committee also suggested that the questionnaire be completed by a representative of the school division and a representative of the industry, and that both sign off of the questionnaire upon its completion. The committee felt that this would give the questionnaire the additional clout needed to make its results be taken seriously.

Fourth, a summative committee was formed to validate the criteria drafted by the formative committee. The committee met on December 8, 1995, and reviewed and validated the criteria drafted by the committee and presented by the researcher. After reviewing the criteria the committee recommended that the question related to total quality management be placed in the optional category since total quality management training is not yet standardized across the school division.

The summative committee was selected by the director of technical and career education. The director of technical and career education wanted to insure that all of the various groups who were affected by the course had opportunity to be involved in the evaluation of the course. The members of the committee were the principal of the technical center, a student volunteer, a representative of the Virginia Beach City Public Schools Educational planning center, the director of technical and career education, a representative of a local computer networking training center, and the coordinator of computer networks for the school division.

The coordinator of computer networks served on both the formative committee as well as the summative committee due to the highly technical nature of the content of the course. The director of technical and career education felt that both committees needed to have technical expertise in the computer networking field available during the committee meetings. The coordinator of computer networks was chosen because it was felt that he would reflect the standards and expectations of the school divisions office of technology, who is responsible for the installation and upkeep of the school division's computer networks.

The representative of the educational planning office for the school division was selected by the director of technical and career education because the office of educational planning has been given the responsibility to evaluate new courses during the first two years of their existence. The director felt compelled to include this person so that the office of educational planning could help to validate this questionnaire development process.

Fifth, based on the criteria developed by the formative committee and validated by the summative committee the researcher drafted a questionnaire (see Appendix F). The format of the questionnaire followed the six categories developed by the formative committee. Those categories are classroom, hardware, software, teacher, curriculum, and optional requirements. Each section of the questionnaire contains closed-ended questions designed to evaluate the course based on the criteria established by the formative committee. The final questionnaire also included the signature section requested by the formative committte as part of the criteria. The questionnaire was presented by the researcher to the formative committee for review and approval on January 11, 1996 (see Appendix B).

Sixth, the completed questionnaire was presented to the summative committee for review and validation on January 12, 1996 (see Appendix C). The summative committee reviewed the questions listed in each category and evaluated the questionnaire for face and content validity.

The committee discussed the use of this questionnaire to help to determine possible sites for expansion of the program. The committee felt that by including areas in addition to the Novell requirements, the questionnaire could be used in the selection of additional sites if necessary.

Seventh, the approved questionnaire (see Appendix F) was submitted on January 23, 1996, to the Associate Superintendent of Instruction for final approval.

Chapter 5

DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Discussion

During the formative committee meetings, discussion was held on the Novell requirements for certified training programs. The committee discussed the rapid change of technology in the computer industry and how implementation of industry-certified courses, particularly those based around the computer industry, would require annual evaluation. The committee agreed with Mulford (1995, p.37) that vocational education courses needed to be updated regularly in order to keep the contents of the course in alignment with industry requirements. The committee realized that aligning with industry certifications might require school divisions to spend additional dollars on technology, but that at least it would provide some direction for those dollars.

The formative committee also realized that the goal of having industry-driven curriculum is nothing new. The committee agreed with Artis (1994, p. 26) that vocational personnel have been teaching industry related trades for years. The committee also discussed that requirements for an endorsement as a industry-certified instructor requires different criteria than that of a traditional teacher. The committee felt that the industry endorsement was a plus for the knowledge base it provides and that teachers should be given the opportunity to obtain industry certifications. This confirmed the research by Scrogan (1995, p. 39). The committee also agreed that even though vocational curriculum has been industry based, vocational educators over the past decade have lost touch with the changes and needs occurring in the various industries they serve.

While discussing the tools, and concepts of total quality management the summative committee wrestled with the idea of whether or not total quality management training was part of the industry standard. The literature from the computer industry discussed a lot of the concepts of total quality but very few actually stated that they followed total quality as a philosophy. The literature explaining the requirements of the certifications also did not include total quality as a requirement. The committee reviewed the literature that reflected that total quality skills were making a difference in the classroom and felt that providing background training in total quality was beneficial to the students. But the committee felt that since Novell, or the computer industry, did not require TQM for certification the question should be included under the optional category.

The formative committee also reviewed the design of questionnaires. The committee wanted the questionnaire to be designed so that it was simple and straight forward. Many of the committee members had previously been asked to complete questionnaires that they felt were confusing and hard to understand. The committee agreed with McMillian and Schumacher (1993, p. 36) that many questionnaires designed for use in educational institutions follow a closed question format. The committee also felt, after reviewing the literature available, that this questionnaire should also follow a closed question format.

The formative committee also felt very strongly about industry accepting the results of the questionnaire. The committee talked about the need to have the industry sign off on the questionnaire as part of the evaluation process. The committee resolved that this would help to validate the process used to review the course to industry, and help the office of techncial and career education justify the necessary budget requests to keep this course at an industry-certified level.

Conclusions

As the formative committee reviewed the literature pertaining to Novell certification requirements, the question of what criteria should be included in the questionnaire was clarified by the Novell standards for authorized training centers. After reviewing these standards, the formative committee determined that the Novell requirements would be included in the questionnaire, but that the additional requirements that related to secondary classroom expectations should be added. The committee identified lesson plans and competency sheets that are required by the state department of education to be included in the questionnaire as part of the questionnaire criteria.

The summative committee concluded that even though the students should be exposed to the concepts and philosophy of total quality, it should be an optional requirement not mandatory.

The committee determined that even though success has been achieved in the secondary classroom with teachers and students utilizing total quality concepts and tools, there was not yet an established standard as to what should be required in teaching total quality on the secondary level.

The formative committee also reviewed educational questionnaire design. The committee concluded that the questionnaire should use a close-ended question format. In addition, the committee determined that the questionnaire should be categorized into six categories: software, classroom, hardware, teacher, curriculum, and optional requirements. The committee also determined that a signature area at the bottom of the questionnaire was essential. By requiring both a representative of the school division and one from the industry, the results of the questionnaire would be more readily accepted by both school personnel and industry.

Implications

By recommending the Novell requirements for certified training programs be used in the questionnaire, the committee will be breaking with tradition. Traditionally, with any new course teachers and administrators would be brought together to determine what guidelines would be established to evaluate the program. Since the purpose of the course is to provide the students with an industry-certified course, it seems only natural to use the criteria established by the industry to determine how well the course is meeting the criteria. By adding the lesson plan and competency sheet requirement Novell, and the networking industry, could look at this as education meddling in something it knows very little about.

By adopting the industry requirements for industry-certified courses, the school division will also be impacting the budgeting practice. As was discussed by the committee, the questionnaire will need to be updated each year and the computer labs being used for industry-certified training be reevaluated on an annual basis. In order to expand the course into the home high schools, the school computer labs may need to be upgraded to current Novell standards. This will effect the annual budgeting monies within the school division.

By requiring industry to sign off on the questionnaire, this means that industry will need to be an active participant in the evaluation process of secondary vocational training programs. This will be a bold step for most school divisions, since they have not asked for industry input as to the material being covered in many classrooms.

Recommendations

The implementation of industry-certified criteria into the classroom will require that the school division begin to collect data on the budget impact of maintaining industry-certified courses. It was recommended that the director of technical and career education begin annually tracking expenses of the normal technical courses and the industry-certified technical courses in order to compare per pupil expenditures for each course. By adapting the monthly financial statement for the office of technical and career education, the director can identify the per pupil costs.

It was recommended that further research be collected by using the questionnaire to evaluate the business education computer labs in all of the home high schools in Virginia Beach to determine what schools, if any, have labs that meet the criteria for Novell certified networking administrator training programs. This will also help to determine the budget impact of any plans for expansion of the course into the home high schools.

It was also recommended that this data be collected by the director of technical and career education and included in the technical and career education annual report to the school board in a section dedicated to reporting the results of the computer lab evaluations, and costs involved with implementation of industry-certified programs. This process will provide the school division with the opportunity to benchmark the development of industry-certified programs.

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APPENDIXES

Appendix A

Formative Committee

Certified Network Administrator Questionnaire Development Team

Mrs. Debbie Gentry, TQM Coordinator
Office of Technical and Career Education

Mr. Mark Thorsen, Director of Networks
Office of Technology

Mr. William Graham, School-To-Work Transition Specialist
Technical and Career Education Center

Mrs. Kathy Adkins, Marketing Support Manager
Electronic Systems Corporation

Appendix B

Formative Committee Minutes

Certified Network Administrator Questionnaire Development
VIRGINIA BEACH CITY PUBLIC SCHOOLS

October 29, 1995
Virginia Beach Technical and Career Center
2:15 p.m.-4:00 p.m.
MINUTES

Members Present:
Debbie Gentry, Mark Thorsen, Bill Graham, Kathy Adkins, Jim Barger

Members Absent:
None

Guests Present:
Dr. Konopnicki

General Discussion:

The meeting was called to order by Jim Barger. After general introduction by each team member, Mr. Barger gave a historical overview of the CNA program located at the technical and career center.

Ms. Gentry noted that since this program was setting a precedent of being a new type of course that was driven by industry standards and industry-approved curriculum, she would recommend that a questionnaire be established by the committee to document what was necessary in any industry-approved course.

At this point Mr. Barger, Kathy Adkins, and Mark Thorsen explained some of the basic requirements that were required by the Novell Corporation for certified training programs. It was discussed that since one of the major goals of the course was to offer the students industry-certified training, it would be necessary to evaluate the program using the basic requirements set by Novell for training labs and curriculum.

Debbie Gentry and Bill Graham agreed, but felt that the program should not be evaluated only on the Novell standards. It was felt that the instructor from Electronic Systems and the technical center staff had added additional value and competencies to the course, over and above the Novell requirements , and that those areas should be evaluated as well. Discussion ensued concerning the various added areas from cooperative education and surveying of students, business, and parents.

Dr. Konopnicki asked Mr. Barger to note all of the necessary requirements for the CNA program that had been discussed and design a check-off questionnaire for the committee to review. By developing this questionnaire, all of the business computer labs at the Technical Center could be evaluated to determine if they met the Novell criteria. Dr. K went on to say that by evaluating all the labs, it could be determined which labs could be utilized if the CNA program would be need to be expanded. The committee agreed and asked Mr. Barger to bring this draft questionnaire back to the next meeting.

The committee then began discussing the next date for the committee to meet to review the questionnaire draft. The next meeting date was set for Thursday, December 7, 1995. The committee also agreed that the Technical and Career Center was the most convenient place to meet and that future meetings would be held there. Ms. Gentry then reviewed the next meeting date, time and location, and asked that each sub-committee bring the information that they were able to find to the next meeting.

With no further business, the meeting was adjourned.

Formative Committee
Certified Network Administrator Questionnaire Development
VIRGINIA BEACH CITY PUBLIC SCHOOLS

Thursday December 7, 1995
Virginia Beach Technical and Career Center
2:15 p.m.-4:00 p.m.
MINUTES

Members Present:
Debbie Gentry, Mark Thorsen, Bill Graham, Jim Barger

Members Absent:
Kathy Adkins

Guests Present:
Dr. Konopnicki

General Discussion:

Mr. Barger presented the listing of requirements for establishment of a certified computer lab that had been discussed in the previous committee meeting. He explained that the requirements include hardware, software, class size, number of students, etc. He also explained that Novell had three levels of computer lab certifications: level I, II, and III. The requirements for a certified CNA lab fall into the level I category.

Mr. Barger then presented the committee with the draft of the questionnaire that included all of the items identified by the committee at its first meeting. Mr. Barger and Dr. Konopnicki discussed the various types of formats for questionnaires and the types of questions that are normally used. The committee asked for a simple format and for questions that could be answered "Yes" or "No".

The committee then preceded to have the same type of discussion regarding the requirement of students to pass the Drake certification test in order to receive credit for the class. The committee determined that if passing the test was the prerequisite for obtaining credit, the teacher would be more inclined to teach to the test. The committee wanted to emphasis that the purpose of the course was for students to obtain the skills, not a piece of paper.

The committee then had a lengthy discussion as to how well the industry would accept the results of this survey. The discussion also included how the well the school division would be able to accept the results of the survey when it came time to budget for upgrading software and hardware to remain within the standard. The committee requested that Mr. Barger include a section at the bottom of the questionnaire that would allow for two signatures, one signature from a computer networking industry representative and one signature from the school division. The committee also recommended that when the questionnaire is used, these representatives be the persons conducting the evaluation, and then be required to sign-off to on the evaluation results. The committee hoped that by doing so, both parties would have a better understanding of the process and more acceptance of the results.

The committee then asked Mr. Barger to take back the additional information discussed and create a final draft for review and approval at the next meeting. Mr. Barger explained that he would include all of the criteria set by the committee in the next draft of the questionnaire. Mr. Barger also explained that he would be presenting the criteria to the CNA evaluation team for their review and approval at their next meeting on December 8, 1995, and would include any changes that committee felt appropriate before returning to the next committee meeting.

At this time the next meeting date was set for Thursday January 11, 1996, at the Technical and Career Center from 2:15-3:30 p.m..

With no further business, the meeting was adjourned.

Formative Committee
Certified Network Administrator Questionnaire Development
VIRGINIA BEACH CITY PUBLIC SCHOOLS

Thursday January 11, 1996
Virginia Beach Technical and Career Center
2:15 p.m.-4:00 p.m.
MINUTES

Members Present:
Debbie Gentry, Mark Thorsen, Bill Graham, Kathy Adkins, Jim Barger

Members Absent:
None

Guests Present:
Dr. Konopnicki

General Discussion:

The meeting opened with a tour of the existing CNA lab at the Technical Center and an opportunity to talk to the current CNA students.

As the meeting convened, Mr. Barger gave an overview of the task that was presented to the committee. The committee was asked to design a questionnaire that would include all of the requirements for Industry Certification for the CNA program. These requirements would need to include Novell requirements as well as Virginia Beach City School and the State of Virginia Requirements. Mr. Barger explained that the committee had discussed requirements from Novell, Virginia Beach, the State of Virginia, and those additional items requested by the committee. Mr. Barger also discussed with the committee that the CNA evaluation committee had reviewed the criteria for the questionnaire in their December 8, 1995, meeting.

With that thought in mind Mr. Barger presented the committee with the final draft of the CNA questionnaire. Mr. Barger then went through the questionnaire one question at a time to allow the committee to examine the focus, the type, and the appropriateness of each question. Mr. Barger informed the committee that the CNA evaluation committee had requested that the question regarding TQM being taught in the classroom be moved from the mandatory curriculum requirements to the optional requirements. He explained the concern expressed by the committee that no standards had yet been set by the industry or the school division as to what should be taught at the secondary level.

The committee had several questions in regard to the area of teacher requirements and the change from requiring the teacher to be a CNI. Mr. Barger explained that this requirement was dropped by Novell in October of 1995.

Mr. Barger also explained the scoring system that allows for each question to be valued at one point with a minimum total of 22 to be required for certification.

After reviewing the questionnaire, Mr. Barger asked the committee if they had any additional changes or recommendations for the questionnaire. Being none, Bill Graham made a motion to approve the questionnaire and submit it to the CNA Evaluation Committee for formal approval at their January meeting. The motion was seconded by Debbie Gentry, and a unanimous vote of approval was given.

At this time Mr. Barger thanked each member of the committee for the time and hard work that each person had put into this project.

With no further business, the meeting was adjourned.

Appendix C

Summative Committee Minutes

Certified Network Administrator Evaluation Team
VIRGINIA BEACH CITY PUBLIC SCHOOLS

Friday December 8, 1995
Virginia Beach Technical and Career Center
2:15 p.m.-4:00 p.m.
MINUTES

Members Present:

Dr. Patrick Konopnicki, Bill Moosha, Brooke Schabb, Jim Barger, Kathy Adkins, Mark Thorsen, Laura Roncinske

Members Absent:

Guests Present:

Bill Graham

General Discussion

The meeting was called to order by Jim Barger. Mr. Barger reviewed the minutes from the November committee meeting and asked the group for any corrections or additions. The committee had none, and the minutes were approved.

Mr. Barger then presented the committee with the criteria that had been developed by the sub committee working on the evaluation questionnaire for the CNA program. Mr. Barger went through each question and explained the general feelings of the committee as to why that item was important enough to include on the questionnaire.

The committee discussed each area of the questionnaire and only had concern with the area of Total Quality Management concepts and tools being mandatory for certification of the course by industry. The committee discussed that no where in the Novell literature that Mr. Barger had reviewed with them was there anything specifically requiring TQM to be taught as a requirement for certification of the course. The committee went on to discuss in length the fact that many of the teachers in Virginia Beach are teaching and using TQM in the classrooms, but even the school division had not set specific criteria that was to be covered in secondary classrooms.

Mr. Thorsen made the motion that the question regarding TQM be moved from the mandatory curriculum requirements to the optional requirements section. Dr. Konopnicki seconded the motion.

Mr. Barger indicated that he would make the modification to the questionnaire and explain the committee's reasons for the change to the sub committee members.

Mr. Barger also explained to the committee that he would bring the final draft of the questionnaire to the next meeting of the committee for final approval.

The committee then discussed the date for the next meeting which was set for Thursday, January 12, 1996, to be held at the Technical and Career Center at 2:15 p.m..

With no further business, the meeting was adjourned.

Certified Network Administrator Evaluation Team
VIRGINIA BEACH CITY PUBLIC SCHOOLS

Friday January 12, 1996
Virginia Beach Technical and Career Center
2:15 p.m.-4:00 p.m.
MINUTES

Members Present:

Dr. Patrick Konopnicki, Bill Moosha, Brooke Schabb, Jim Barger, Kathy Adkins, Mark Thorsen, Laura Roncinske

Members Absent:

Guests Present:

Bill Graham

The meeting was called to order by Jim Barger. Mr. Barger reviewed the minutes from the December 8, 1995, committee meeting, and asked the group for any corrections or additions. The committee had none and approved the minutes.

General Discussion

Bill Graham asked to report out for the sub-committee studying the possibilities of surveying the CNA students from last year. Mr. Graham gave an overview of the current survey used by the state department of education when evaluating vocational education programs around the state. This survey was developed by Virginia Tech and has been in use for approximately 3 years.

Mr. Graham passed out a copy of the survey to each committee member and reviewed each question on the survey for appropriateness. The Ms. Schabb recommended that two additional items be placed on the survey; first ask the students if they currently hold CNA certification, second if not do they intend on retaking the test. By asking this question Ms. Schabb explained we can get data as to how many students who failed to pass the CNA test before graduation have either now passed it, or how many intend to try to retake the test. The committee agreed with the recommendation and asked Mr. Graham to work with his sub committee to adjust the survey and bring back a final version to the next meeting.

Ms. Schabb then reviewed the survey that was developed to ascertain to what extent the students felt that they had achieved the objectives of the course. Ms. Schabb distributed to the group a sample of five survey questions using the Novell classroom objectives. She went on to explain that between the classroom objectives and the on-the-job objectives there were too many to include on one survey. Mr. Barger asked if Ms. Schabb's sub-committee could narrow down the survey to five questions from each of the following areas: the Novell classroom objectives and the on-the-job objectives and bring this ten question survey back to the committee for final approval. The committee agreed.

Mr. Barger then presented the committee with the final draft of the CNA questionnaire. Mr. Barger preceded to explain the process that had been involved with the development of the questionnaire and listed the member of the committee and the areas of expertise that they represented.

Mr. Barger and Mr. Graham explained to the committee the Virginia Beach, Novell, and state department requirements identified by the questionnaire committee and how they affected the program and the development of the questionnaire. Mr. Barger explained each question on the questionnaire and its purpose.

The committee discussed the pros and cons of having this type of questionnaire available for use with any existing or future computer lab in the school system. The idea of duplication of the CNA program to the home high schools was discussed and the committee agreed that this questionnaire would be invaluable to determining the status of the existing labs if expansion was a possibility.

The committee then discussed who would actually conduct the or use the questionnaire. After much discussion, Mr. Barger reminded the committee that they had requested the sign-off at the bottom of the questionnaire was for a representative of the school system and a industry representative. The committee agreed that by having the industry representative's signature on the questionnaire, it would give validity to the results of the questionnaire.

At this time Dr. Konopnicki made a motion that the committee approve the questionnaire. The motion was seconded by Bill Moosha and unanimously approved by the committee.

Dr. Konopnicki then asked if it would be helpful if a fact sheet relating all of the various highlights about the CNA program be drafted for use with public relations and recruiting. Mr. Moosha stated that it would be very helpful when visitors toured the lab to be able to hand them this type of document. The committee asked Dr. K and Mr. Barger to draft the fact sheet and bring it to the next meeting.

At this time the next meeting date was set for Tuesday, February 20, 1996, at the Technical and Career Center from 2:15-3:30 p.m..

With no further business, the meeting was adjourned.

Appendix D

Summative Committee
Certified Network Administrator Course Evaluation Team

Mrs. Kathy Adkins, Marketing Support Manager
Electronic Systems Corporation

Ms. Brooke Schabb, Evaluation Specialist
Office of Educational Planning

Dr. Patrick Konopnicki, Director
Office of Technical and Career Education

Mr. William Moosha, Principal
Technical and Career Education Center

Miss Laura Roncinske, Cooperative Office Education Student
Office of Technical and Career Education

Mr. Mark Thorsen, Director of Networking
Office of Technology

Appendix E

Completed Questionnaire

Question Number	Yes	No	Required for Industry Certification?	Requirements
				Classroom Requirements
1			Yes	Is the maximum number of students per class 20 or less? (one student per workstation)
2			Yes	Does the classroom have a Overhead Projector available?
3			Yes	Does the classroom have a Video Projection Unit?
4			Yes	Does the classroom have a White Projection Screen?
5			Yes	Does the classroom have a White or Blackboard?
6			Yes	Does the classroom have a VCR and TV available?
				Hardware Requirements
7			Yes	Are all student workstations are at least 386 CPU's?
8			Yes	Do all student workstations have at least 8 meg of ram?
9			Yes	Do all student workstations have at least 80 meg harddrives?
10			Yes	Are all student workstations using MS-DOS version 3.3 or higher?
11			Yes	Does the classroom network file server have at least 16 mb of ram?
12			Yes	Does the classroom network file server have at least 300 meg of hard drive space?
13			Yes	Does the network utilizes Ethernet or Token Ring Cabling system?
14			Yes	Does the network File server contains a modem?
15			Yes	Is there a CD-ROM unit is attached to the network?
16			Yes	Is there a minimum of 1 printer (any kind) attached to the classroom network?
				Software Requirements
17			Yes	Does the network have 1 Network copy Windows or Windows NT?
18			Yes	Does the network have 1 Network Copy of NetWare 3.1x or higher?
				Teacher Requirements
19			No	Is the Teacher a Certified NetWare Instructor?
20			No	Is the Teacher a Certified NetWare Engineer?
21			No	Is the Teacher a Certified NetWare Administrator?
22			Yes	Has the teacher received network administration training?
				Curriculum Requirements
23			Yes	Are the students scheduled to take the Novell course # 508 certification test from Drake Testing?
24			Yes	Does the instructor have lesson plans in addition to the Novell materials?
25			Yes	Does the instructor maintain competency sheets for each student?
			Totals	***Total the number of responses in each column. A minimum score of 22 in the "YES" column is required for Industry Endorsement.***
				Optional
26			Optional	Does the classroom have a Flip Chart available for use?
27			Optional	Does the course utilize the student and instructor kits for Novell course # 508?
28			Optional	Does the curriculum contain a on-the-job work experience?
29			Optional	Does the curriculum contain competencies related to Total Quality Management?
30			Optional	Is the instructor given on-the-job coordination time in his/her teaching schedule?

School Official
Title: ______________________ **Date:** __________
Industry Official
Title: ______________________ **Date:** __________
Company ______________________

BEST COPY AVAILABLE

Dr. Warren Groff
1531 Peabody Avenue
Memphis, Tennessee 38104

March 15, 1996

Dear Dr. Groff:

Here is the copy of the practicum for publication that you requested. Please consider this letter an approval to include it in your upcoming publications.

Thanks!

Cordially:

J Barger

James E. Barger
1125 Crossway Road
Virginia Beach, Virginia 23454
804-426-5724 (office)
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THE DEVELOPMENT OF A STRATEGIC PLAN TO PROVIDE A MULTISITE ELECTRONIC ENGINEERING TECHNOLOGY PROGRAM AT THE COMMUNITY COLLEGE OF ALLEGHENY COUNTY

Pearley Cunningham

A major applied research project prospectus presented to
Programs in Higher Education in partial fullfillment
of the requirements for the degree of
Doctor of Education

Nova Southeastern University
September, 1995

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INTRODUCTION

Background

The Community College of Allegheny County (CCAC) is a multicampus comprehensive community college located in the Pittsburgh, Pennsylvania, metropolitan area. Prior to 1987 each campus offered programs related to electrical engineering technology. Since 1987, however, three of the four campuses have eliminated their programs in electronics and electrical engineering technology. At present, the South Campus is the only campus offering programs in this field.

Despite the program reductions at CCAC, recent national surveys show electrical engineering technology to be the most popular technical program offered by community colleges (Burton, 1995; Cunningham, 1995). Also, the CCAC document Job Outlook 2005 (1993) predicts a 28% growth in jobs for engineering technicians and a 34% growth for electrical and electronic engineers. These are both careers that students can pursue at South Campus.

Nature and Significance of the Problem

The program reductions at CCAC have been based primarily on economic considerations. For example, the enrollments at CCAC have declined by 6.9% between 1988 and 1993 (CCAC, 1994). Therefore, it is not economically feasible to offer complete technical programs at all sites. The duplication of equipment would be prohibitive and the resulting reduction in individual campus enrollments would raise costs.

Furthermore, because of the large size of the county, travel between campuses is difficult. Currently, some students report spending three hours daily in commute time. This is nearly the same as their in-class time. Hence, these students have expressed a need for easier access to technology education.

Campbell (1995) reports that there is a growing need to provide education to the student at their location. Through the use of technology, classroom time can be more efficient with students achieving equal or better performance. The use of media technology and computer networks can be a cost effective approach to providing education.

Current course delivery models require the students and the instructor to come together at a common location. Nicholas Negroponte (1995), Director of the MIT Media Lab, states that in the future we must move bits not atoms. He describes the current classroom model as moving atoms to a common place. The use of computer networks can allow the movement of digital bits so that many knowledge-based activities can be accomplished independent of the location. Jones International through the Mind Extension University and the International University College is demonstrating that technology can reduce the barriers of time and geography to needed education (Jones, 1995). Through today's networks, it is possible for students and faculty at multiple locations to exchange text, pictures, and audio.

A technical infrastructure is beginning to form at CCAC that could address this problem. This technical infrastructure will allow use of video, email, and networking across the college.

With computer networks the college can meet the challenge to provide the education to the student instead of the student to the education.

Purpose

The purpose of this project is to develop a strategic plan for student access from any college site to the Electronic Engineering Technology Program. The plan will provide for integration of the graduates of the high school Tech Prep programs in electronics and engineering technology. These new high school initiatives have been developed by the college administration and the high schools, but operational integration with the associate degree programs in electrical and electronics engineering technology remains to be completed.

To minimize geographical restrictions, attention will be directed to the creation of a virtual learning community. Through the use of modern electronic communications, students at different campuses can interact, communicate and work collaboratively with students at different locations. For example, Northern Virginia Community College is currently offering an associate degree in engineering science through network-based distance education (Sener, 1995). By utilizing the traditional, local, campus-based courses in general education with network delivered technical courses, it should be possible for students at CCAC to pursue the associate degree in electrical engineering technology at their local campus.

Research Questions

The following research questions will be addressed by this project:

1. How can the newer electronic communications technologies be used to provide a virtual learning community across the college?

2. What is the appropriate strategic plan (a) to offer a multisite program by network communications, (b) to establish the needed coordination between program levels and institutions, (c) to disseminate the plan, and (d) to develop an assessment process of the plan's effectiveness.

3. Can the knowledge and skill levels expected by industry of graduates be achieved through a multisite networked program?

METHODOLOGY AND PROCEDURES

The development problem solving methodology will be used in this project. Several procedures will address the above mentioned research questions.

First, a review of the literature related to distance education, and applications of computers to program delivery will be conducted. An examination the experiences of others should result in a determination of the techniques, software, and procedures that have been successful at other schools.

Next, two advisory groups will be formed. One will consist of educational personnel and the second will consist of industrial personnel. The initial meeting of these two groups will be separate to discuss multiple aspects of a strategic plan.

The results of these two meetings will be summarized and will be provided to both groups. A second combined meeting will resolve any differences.

As these groups are discussing the content of the Electronic Engineering Technology Program, a plan of potential network needs to support the course work at all four campuses will be conducted. This review will result in a description of the needed internetworking and intranetworking requirements to support the program.

The final step will be to prepare a written strategic plan for the offering of the Electronic Engineering Technology Program at multiple college sites. This plan will be submitted for review to the chair of each of the respective advisory groups, the Executive Dean of the Campus, and to the MARP advisor. Based on their comments the plan will be revised. In addition, this plan will be included as an appendix to the MARP report.

IMPROVEMENT OF EDUCATIONAL PRACTICE

It is anticipated that implementation of such a plan would allow more students to pursue a career in electrical engineering technology and, at the same time, control program costs for both the student and the college. Although this project focuses on the Electronic Engineering Technology Program, problems of needed infrastructure and coordination apply to several technical programs. Therefore, the successful implementation of the plan would encourage faculty in other technical programs that are unique to only one site to explore newer delivery systems.

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Pearley Cunningham
139 National Drive
Pittsburgh, PA 15236

November 16, 1995

Dr. Warren H. Groff
1531 Peabody Avenue
Memphis, TN 38104

Dear Dr. Groff:

This letter gives you permission to use the prospectus document titled

THE DEVELOPMENT OF A STRATEGIC PLAN TO PROVIDE A MULTISITE ELECTRONIC ENGINEERING TECHNOLOGY PROGRAM AT THE COMMUNITY COLLEGE OF ALLEGHENY COUNTY

in any educational way you see fit to help others understand the MARP process.

Sincerely,

Pearley Cunningham

Pearley Cunningham